

Project Manual – Volume I

For Bid Pac H-1 Re-Bid

New Dover High School

Dover, Delaware

EDiS Company, Inc.



Becker Morgan Group, Inc.



ARCHITECTURE
ENGINEERING

ABHA Architects



Capital School District



June 5, 2013

**Capital School District
New Dover High School
Bid Package 'H-1'**

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Public notice is hereby given that sealed bids for the following prime contract will be received for the construction of New Dover High School located in Dover, Delaware. Bids will be received at the Professional Development Administration Building located at 198 Commerce Way Dover, Delaware 19904-8210 until 3:00 pm local time on July 2, 2013, at which time they will be publicly opened and read aloud. *Bidder bears the risk of late delivery. Any bids received after the stated time will be returned unopened.* The time and location of the bid opening may be extended with a minimum of two (2) calendar days' notice to the Bidders.

Contract NDHS-41: Telecommunications
Contract NDHS-42: AV & Sound System
Contract NDHS-43: Intercom, Clocks, Intrusions/Access, Video Surveillance

Documents may be viewed and downloaded at the following FTP site after 4:00 PM on June 10, 2013:

bids.ediscompany.com
Log in: capitalhs
Password: edis0412

It is the responsibility of each bidder to review and coordinate all project documents. This includes plans, specifications and addendums. Please email Jackie McKee at jmmckee@ediscompany.com when you obtain documents via the FTP site so we can provide future bidding information to your company. Documents may be examined at the office of the Architect, ABHA 1621 N. Lincoln Street, Wilmington, DE 19806 the Construction Manager, EDiS Company, 110 S. Poplar Street, Suite 400, Wilmington, Delaware 19801; the office of Delaware Contractors Association, 527 Christiana Stanton Road, Newark, Delaware 19713; and F. W. Dodge Corporation, Conshohocken, Pennsylvania.

A bid security in the amount of 10% of the bid, plus consent of surety must accompany each bid. Bid Security shall specify the Owner as the obligee. Owner: Capital School District.

A pre-bid meeting will be held at Professional Development Administration Building located at 198 Commerce Way Dover, Delaware 19904-8210 on June 13, 2013 at 1:30 PM local time. Attendance is highly suggested but not mandatory.

Please contact EDiS Company, Kevin Lucas at 302-421-2893 or klucas@ediscompany.com with questions.

Conformance to the Delaware Architectural Accessibility Act and the standards of the Architectural Accessibility Board is required on the Project.

END OF SECTION

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

1. DEFINITIONS

- 1.1 Bidding Documents include the Contract Documents, Invitation to Bid, Instructions to Bidders, the Proposal Forms, Contract, General Conditions of the Contract, Supplementary Conditions, Specifications, Plans, and any Addenda issued prior to receipt of bids.
- 1.2 All definitions set forth in the General Conditions and the other Contract Documents are applicable to the Bidding Documents.
- 1.3 "Addenda" are written or graphic instruments issued by the Architect/Engineer prior to the receipt of bids which modify or interpret the Bidding Documents, by additions, deletions, clarifications or corrections. Addenda become part of the contract documents upon execution of the agreement.
- 1.4 The term Work is defined in 1.1.3 of the General Conditions.
- 1.5 A "Unit of Work" includes all Work covered by the one or more Sections of the specifications listed under that particular Unit of Work in Section 01 11 00 - SUMMARY OF WORK. A Unit of Work is the smallest portion of the Project for which a separate Bid will be accepted by the Construction Manager. The word "Unit" means "Unit of Work" whenever the context clearly implies "Unit of Work".
- 1.6 A "Bid" is a complete and properly signed proposal to do one or more Units of Work for the sum stipulated therein.
- 1.7 A "Bidder" is one who submits a Bid to the Bidding Agency for the Unit or Units of Work indicated therein.
- 1.8 A substantial amount of specification language constitutes definitions for terms found in other Contract Documents, including drawings, which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in Contract Documents are defined generally in this article. Definitions and explanations to this section are not necessarily either complete or exclusive, but are general for the work to the extent not stated more explicitly in another provision of Contract Documents.
- 1.9 General Requirements (or Conditions) apply to entire work of Contract and, where so indicated, to other elements which are included in the project.
- 1.10 The term "indicated" is a cross reference to details, notes or schedules on the Drawings, to other similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "schedule" and "specified"

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are used in lieu of "indicate," it is for purpose of helping to locate cross reference and no limitation of location is intended, except as specifically noted.

- 1.11 Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted" and "permitted" mean "directed by Construction Manager or Architect", "requested by Construction Manager or Architect", etc.
- 1.12 Where used in conjunction with Construction Manager's or Architect's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of the term "approved" will be held to limitations of Construction Manager's and Architect's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "approval" by Construction Manager or Architect be interpreted as a release of Contractor from responsibilities to fulfill requirements of the Contract Documents.
- 1.13 The "Project Site" is the space available to Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the Project. The extent of project site is shown on the Drawings and may or may not be identical with description of the land upon which project is to be built. The Contractor shall visit the site to verify contract or construction limits.
- 1.14 Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- 1.15 Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations as applicable in each instance.
- 1.16 Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- 1.17 An "Installer" is the entity, person or firm, engaged by the Contractor or his subcontractor or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operation. It is a general requirement that such installers be expert in operations they are engaged to perform.
- 1.18 The duties and obligations of the Contract apply to this Contractor (as defined herein) regardless of similar or identical duties or obligations of other Prime Contractors related to the Project. Therefore, even though other Prime Contractors may have similar, identical or overlapping duties and obligations, each and every duty and obligation set forth in this Contract is enforceable against this Contractor.

2. BIDDER'S REPRESENTATION

2.1 Each Bidder in submitting its bid represents that:

1. It has read and understands the Bidding Documents and its Bid is made in accordance therewith.
2. Contractor has visited the site; familiarized himself with the local conditions under which the work is to be performed; compared the site with drawings and specifications; satisfied himself of the conditions of delivery, handling and storage of materials and all other matters that may be incidental to the Work before submitting his Bid.
3. Its Bid is based upon the materials and equipment described within the Bidding Documents without exceptions.

2.2 EVIDENCE OF REPRESENTATION

1. Submission of a Bid will be considered as evidence of the bidder's representation. No allowance will subsequently be made to the successful contractor by reason of any error omission on his part, due to his neglect in complying with the requirements of this article.

3. BIDDING DOCUMENTS

3.1 ISSUANCE

1. Bidding documents will be available from the EDiS FTP site bids.ediscompany.com. It is the responsibility of the bidders to be aware and familiar with all Contract Documents including previously issued Bid Packages.
2. Bidding Documents will not be issued to subcontractors or other individuals or organizations who will not be contracting directly with the Owner.
3. The complete set of Bidding Documents shall be used in preparing bids; neither the Owner, the Architect nor the Construction Manager assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
4. The Owner, Architect, and the Construction Manager, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining bids on the Work and do not confer a license or grant for any

other use.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

1. Bidders shall examine the Bidding Documents carefully and shall promptly notify the Construction Manager of any ambiguity, inconsistency or error which they may discover. No request for adjustment of Contract Time or Sum shall be permitted with regard to any purported ambiguity, inconsistency or error not promptly noticed to the Construction Manager.
2. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Construction Manager to reach him at least seven days prior to the date of receipt of bids.
3. Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections, or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, and changes.

3.3 SUBSTITUTIONS

1. Refer to Specification Section 01 62 00 - MATERIAL AND EQUIPMENT.
2. Substitution requests must be made at least seven (7) days prior to the receipt of bids.

3.4 ADDENDA

1. Addenda will be available at the FTP site; email will be used to notify each bidder of the addendums issued.
2. Sub-Bidders, Suppliers, Manufacturers and others wishing to have Addenda mailed free of charge directly to them should address a letter to the Construction Manager requesting a listing on the Addenda mailing list for this Project. Such letter must include no other subject matter, must clearly identify this Project by name, and must indicate, line for line, exactly how the name and address is to be typed on the envelope. Phone requests will not be accepted. The Construction Manager will endeavor, but expressly does not promise, to mail Addenda directly to those who have properly requested. Such mailing list is for this one Project only.
3. Addenda issued during the time of bidding shall be listed on Bid form in the space provided. Failure of a Bidder to receive any Addendum shall not release the Bidder from any obligations under his Bid, provided said addendum was

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sent by fax or by U.S. Mail to the address furnished by the bidder for transmittal of mail. Faxed Addenda will be confirmed by U. S. Mail.

4. No Addenda will be issued later than three (3) days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which extends the time or changes the location for the opening of Bids.

4. BIDDING PROCEDURE

4.1 FORM AND STYLE OF BIDS

1. Bids shall be submitted in triplicate upon the proposal form included in these specifications, or upon an exact copy of it.
2. The Bidder shall complete all blank spaces on the Bid form.
3. Where indicated on the Bid form, sums shall be expressed in both words and figures. In case of discrepancy between the two, the written amount shall govern.
4. Any interlineation, alteration or erasure of an entry made in a blank space of the form must be initialed by the signer of the Bid. However, no interlineation, alteration or erasure shall be made in the wording printed on the bid form unless the Bidder is instructed by the Bidding Documents to do so. The Bidders shall add no stipulations or qualifications on the Bid form or accompanying the bid form unless permitted by or instructed by the Bidding Documents to do so.
5. All requested quantities, unit prices and alternates shall be included as part of the bid.
6. All signatures shall be in long hand.
7. The Bidder shall include on the Bid Form, within the Base Bid total costs associated with providing both the Labor and Material Payment and Performance Bonds.
8. The Bidder shall affix his seal to the bid form, if organized as a corporation.

4.2 SUBMISSION OF BIDS

1. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Invitation to Bid, or any extension thereof made by Addendum. The time and location of the bid opening may be extended with a minimum of two (2) calendar days notice to the Bidders. Bids received

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after the time and date for receipt of Bids will be marked "LATE BID" and returned.

2. The Bid Proposal (3 copies) shall be enclosed in a sealed envelope. The envelope shall be addressed to the Owner, and shall be identified with the Project name, the Bidder's name and address and the Unit of Work included in the Bid.
3. If the Bidder submits his Bid by mail, he shall enclose the above described sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof.
4. Bids shall include a fully executed Bid Bond, Power of Attorney, Non-collusion Statement, Consent of Surety and Subcontractor listing.

4.3 MODIFICATION OR WITHDRAWAL OF BID

1. A Bidder may modify his Bid in writing at any time prior to the time scheduled for receiving Bids, provided such written modification is received by the Construction Manager prior to said time.
2. Unless specifically authorized, faxed bids will not be considered.
3. No Bidder shall modify, withdraw or cancel his Bid or any part thereof for ONE HUNDRED TWENTY (120) days after the time designed for the receipt of Bids, in the Invitation to Bid. Any further extension of the time will be by mutual consent of the Owner and the Contractor.
4. A Bid may be withdrawn up until the time scheduled for receiving the Bids. Such withdrawal shall be in writing.

5. CONSIDERATIONS OF BIDS

5.1 OPENING OF BIDS

1. Bid shall be publicly opened and read aloud.

5.2 REJECTION OF BIDS

1. The Owner, in its sole discretion, shall have the right to reject any or all bids for any reason or for no reason whatsoever.

5.3 ACCEPTANCE OF BIDS

1. The Owner, in its sole discretion, shall have the right to waive any informality

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or irregularity in any Bid received.

2. The Owner shall have the right to accept Alternates in any order or combination.

6. SUBCONTRACT INFORMATION

6.1 SUBMISSION OF SUBCONTRACTOR LIST

1. Should the Contractor fail to utilize any or all of the Subcontractors in the Contractor's Bid statement in the performance of the Work on the public bidding, the Contractor shall be penalized in the amount of (project specific amount *). The Agency may determine to deduct payment of the penalty from the Contractor or have the amount paid directly to the Agency. Any penalty amount assessed against the Contractor may be remitted or refunded, in whole or in part, by the Agency awarding the Contract, only if it is established to the satisfaction of the Agency that the Subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty shall be granted unless an application is filed within one year after the liability of the successful Bidder accrues. All penalty amounts assessed and not refunded or remitted to the Contractor shall be reverted to the State.

* one (1) percent of the contract amount not to exceed \$10,000.

2. Upon request of the Construction Manager, the Bidder shall within seven (7) days of the request submit a list of the other subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) if any, proposed for the various portions of the Work not included in the subcontractors list submitted with the bid.
3. The Bidder will be required to establish to the satisfaction of the Construction Manager the capability and experience of all proposed subcontractors to furnish and perform the work described in the sections of the specifications pertaining to such proposed subcontractor's respective trades.
4. Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner must be used on the work for which they were proposed and accepted, and shall not be changed except with the written approval of the Construction Manager.

7. EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

During the performance of this Contract, the Contractor agrees as follows:

- 7.1 The Contractor will not discriminate against any employee or applicant for

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employment because of race, creed, color, sex or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

- 7.2 The Contractor will, in all solicitants or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color sex, or national origin.
- 7.3 The term "Contract for public works" means construction, reconstruction, demolition, alteration and repair work and maintenance work paid for, in whole or in part, with public funds.
- 7.4 The Secretary of the Department of Labor shall be responsible for the administration of this section and shall adopt such rules and regulations and issue such orders as he deems necessary to achieve the purpose thereof, provided that no requirement established hereby shall be in conflict with subchapter 6904 of this title.

8. PREVAILING WAGE REQUIREMENT

- 8.1 Wage Provisions: In accordance with Delaware Code, Title 29, Section 6960, renovation projects whose total cost shall exceed \$15,000 and \$100,000 for new construction, the minimum wage rates for various classes of laborers and mechanics shall be as determined by the Department of Labor, Division of Industrial Affairs of the State of Delaware.
- 8.2 The prevailing wage shall be the wage paid to a majority of employees performing similar work as reported in the Department's annual prevailing wage survey or in the absence of a majority, the average paid to all employees reported.
- 8.3 The Contractor shall pay all mechanics and labors employed directly upon the site of work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics.

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- 8.4 The scale of the wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work.
- 8.5 Every contract based upon these specifications shall contain a stipulation that certified sworn payroll reports be maintained by every Contractor and Subcontractor performing work upon the site of construction. The Contractor and Subcontractor shall keep and maintain the sworn payroll information for a period of 2 years from the last day of the work week covered by the payroll. A certified copy of these payroll reports shall be made available: 1) Effective June 30, 2007, all Contractors performing work on public work projects are required to furnish sworn payroll records on a weekly basis to the Department of Labor. Specifically, 29 Del. C. § 6960(c) states that "(e)very contract... shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly." Further, that "(t)he Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll." Lastly, the failure to submit payroll reports shall be subject to a civil penalty of not less than \$1,000 nor more than \$5,000 for each violation. 29 Del. C. § 6960(e). Sworn payroll information shall consist of a fully completed and notarized report on a form provided upon request by the Department of Labor. *See Delaware Prevailing Wage Regulations VII A.2(c)*"; 2) upon request by the public or for copies thereof. However, a request by the public must be made through the Department of Labor. The requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Department of Labor in accordance with the Department's copying fee policy. The public shall not be given access to the records at the principal office of the Contractor or Subcontractor; and 3) the certified payroll records shall be on a form provided by the Department of Labor or shall contain the same information as the form provided by the Department and shall be provided within 10 days from receipt of notice requesting the records from the Department of Labor.

9. PERFORMANCE AND PAYMENT BONDS

- 9.1 The Contractor shall be required to furnish bonds covering the faithful performance of the contract and the payment of all obligations arising thereunder with such sureties secured through the Bidder's usual sources as may be agreeable to the parties. The Owner shall be noted as the obligee.
- 9.2 The performance and payment bonds shall each be in an amount equal to 100% of the Contract Sum as adjusted from time to time. The Owner shall be noted as the obligee.
- 9.3 TIME OF DELIVERY AND FORM OF BONDS
1. The Bidder shall deliver the required bonds within seven (7) days from receipt of request from the Construction Manager.

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2. The performance and payment bonds shall be written in the form found in Section 00 61 13 Performance and Payment Bonds.
3. The required bonds shall be by an authorized agent of the bonding company and shall be accompanied by a certified and current copy of the bonding agent's Power of Attorney, indicating the monetary limit of such power. The bonding company shall be licensed to operate in the state which the work is to be performed.

10. EXECUTION OF AGREEMENT

- 10.1 The Agreement will be written on a contract form, stipulated by the Owner, a copy of which is included in the Specifications.
- 10.2 The Bidder shall, within seven (7) days following its presentation, execute the Agreement and return it to the Construction Manager.
- 10.3 The Bidder agrees to commence work within seven (7) days of 1) execution of the Agreement, or 2) receipt of a Letter of Intent to execute the Agreement, or other authorization to proceed, if furnished at an earlier date.
- 10.4 If the successful Bidder fails to execute the required Contract and Bond, as aforesaid, within twenty (20) days after the date of official Notice of the Award of the Contract, their Bid guaranty shall immediately be taken and become the property of the State for the benefit of the Agency as liquidated damages, and not as a forfeiture or as a penalty. Award will then be made to the next lowest qualified Bidder of the Work or readvertised, as the Agency may decide.

11. GENERAL COMMENTS

11.1 JOINT VENTURE AGREEMENTS

In the event of a mandatory pre-bid meeting, representatives of both Joint Ventures must attend the pre-bid meeting and must be an officer and co-joint venture of the corporations involved.

Each Joint Venture shall be qualified and capable to complete the project with their own forces.

Included with the bid submission, and as a requirement to bid, a copy of the executed Joint Venture Agreement shall be submitted and signed by all Joint Ventures involved.

All required bid bonds, performance bonds, material and labor payment bonds must

be executed by both Joint Ventures and be placed in both of their names.

All required insurance certificates shall name both Joint Ventures.

Both Joint Ventures shall sign the bid form and shall submit a valid Delaware Business License Number with their bid or shall state that the process of application for a Delaware Business License has been initiated.

Both Joint Ventures shall include their Federal E. I. Number with the bid.

Due to exceptional circumstances and for good cause shown, one or more of these provisions may be waived at the discretion of the Owner.

11.2 LICENSE APPLICATION REQUIRED TO BID

A business license application must be initiated prior to or in conjunction with the submission of a bid on competitively bid contracts exceeding \$50,000; or in the case of a subcontractor, prior to the submission of a bid by the general contractor. The license application procedure may be initiated by visiting or calling the Division of Revenue.

11.3 BONDING REQUIREMENTS FOR NON-RESIDENT CONTRACTORS

All non-resident contractors are reminded that they must supply a surety or cash bond to the Division of Revenue equal to six percent (6%) of the total of all contracts exceeding \$20,000 for construction within this state. For Division of Revenue purposes, cash bonds and bank letters of credit issued by financial institutions will be accepted on all contracts.

11.4 CONTRACT AWARD TO NON-RESIDENT CONTRACTORS

Every architect, or professional engineer or contractor or construction manager engaging in the practice of such profession shall furnish the Department of Finance within 10 days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of the total value of such contract or contracts together with the names and addresses of the contracting parties.

11.5 STATE LICENSE AND TAX REQUIREMENTS

The Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, "the Contractor shall furnish the State Tax Department within ten (10) days after award of the Contract, a statement of the total values of each contract and subcontract, together with the names and addresses of the contracting parties . . ."

11.6 RIGHT TO AUDIT RECORDS

The Owner (contracting agency) shall have the right to audit the books and records of a Contractor or any Subcontractor under any Contract or Subcontract to the extent that the books and records relate to the performance of the Contract or Subcontract.

Said books and records shall be maintained by the Contractor for a period of three (3) years from the date of final payment under the Prime Contract and by the Subcontractor for a period of three (3) years from the date of final payment under the Subcontract.

END OF SECTION

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

Contract NDHS-41: Telecommunications

BID FORM

For Bids Due: _____

To: Capital School District
945 Forest Street
Dover, Delaware 19904

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES

Alternate BPH-1-39: At Main Gymnasium provide projector and projection screen as indicated on sheet T-125.

Add/Deduct _____ (\$ _____)

Alternate BPH-1-40: At Cafeteria, in lieu of (1) LED screen labeled BASE BID, provide pole mounted ceiling projector as indicated on sheet T-114.

Add/Deduct _____ (\$ _____)

UNIT PRICES

N/A

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for one hundred twenty (120) days (Project Manager's Note: Verify and coordinate with Section 00 21 13 Instruction to Bidders.) from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Bond
Consent of Surety
(Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. <u>Cable Installer</u>	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date _____.

All the terms and conditions of Contract NDHS-41: Telecommunications has been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____ . NOTARY PUBLIC _____ .

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Capital School District in the sum of _____ Dollars
(S _____), or percent not to exceed _____
Dollars (S _____) of amount of bid on Contract No. _____ to be paid to the Capital
School District for the use and benefit of the Capital School District for which payment well and truly to be made, we do
bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the
whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Capital School District a certain proposal to enter into this contract for the furnishing of certain material and/or services
within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute this
Contract as may be required by the terms of this Contract and approved by the Capital School District this Contract to be
entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said
proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate
Seal
Attest _____

By: _____
Authorized Signature

Title

Witness _____

Name of Surety

Title

CONSENT OF SURETY

DATE _____

To: Capital School District
945 Forest Street
Dover, Delaware 19904

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 8 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

Contract NDHS-42: AV & Sound Systems

BID FORM

For Bids Due: _____

To: Capital School District
945 Forest Street
Dover, Delaware 19904

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES

Alternate BPH-1-39: At Main Gymnasium provide projector and projection screen as indicated on sheet T-125.

Add/Deduct _____ (\$ _____)

Alternate BPH-1-40: At Cafeteria, in lieu of (1) LED screen labeled BASE BID, provide pole mounted ceiling projector as indicated on sheet T-114.

Add/Deduct _____ (\$ _____)

UNIT PRICES

N/A

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for one hundred twenty (120) days (Project Manager's Note: Verify and coordinate with Section 00 21 13 Instruction to Bidders.) from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Bond
Consent of Surety
(Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. <u>Audio & Sound Systems</u>	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date _____.

All the terms and conditions of Contract NDHS-42: AV & Sound Systems has been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____ . NOTARY PUBLIC _____ .

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Capital School District in the sum of _____ Dollars
(S _____), or percent not to exceed _____
Dollars (S _____) of amount of bid on Contract No. _____ to be paid to the Capital
School District for the use and benefit of the Capital School District for which payment well and truly to be made, we do
bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the
whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Capital School District a certain proposal to enter into this contract for the furnishing of certain material and/or services
within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute this
Contract as may be required by the terms of this Contract and approved by the Capital School District this Contract to be
entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said
proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal
Attest _____

By: _____
Authorized Signature

Title

Witness _____

Name of Surety

Title

CONSENT OF SURETY

DATE _____

To: Capital School District
945 Forest Street
Dover, Delaware 19904

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 8 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

Contract NDHS-43: Intercom, Clocks, Intrusions/Access, Video Surveillance

BID FORM

For Bids Due: _____

To: Capital School District
945 Forest Street
Dover, Delaware 19904

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES

Alternate BPH-1-39: At Main Gymnasium provide projector and projection screen as indicated on sheet T-125.

Add/Deduct _____ (\$ _____)

Alternate BPH-1-40: At Cafeteria, in lieu of (1) LED screen labeled BASE BID, provide pole mounted ceiling projector as indicated on sheet T-114.

Add/Deduct _____ (\$ _____)

UNIT PRICES

N/A

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for one hundred twenty (120) days (Project Manager's Note: Verify and coordinate with Section 00 21 13 Instruction to Bidders.) from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Bond
Consent of Surety
(Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. <u>CCTV</u>	_____	_____
2. <u>Access Controls</u>	_____	_____
3. <u>Intercom/Clocks</u>	_____	_____
4. _____	_____	_____
5. _____	_____	_____

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date _____.

All the terms and conditions of Contract NDHS-43: Intercom, Clocks, Intrusion & Access, Video Surveillance has been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____ . NOTARY PUBLIC _____ .

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Capital School District in the sum of _____ Dollars
(S _____), or percent not to exceed _____
Dollars (S _____) of amount of bid on Contract No. _____ to be paid to the Capital
School District for the use and benefit of the Capital School District for which payment well and truly to be made, we do
bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the
whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Capital School District a certain proposal to enter into this contract for the furnishing of certain material and/or services
within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute this
Contract as may be required by the terms of this Contract and approved by the Capital School District this Contract to be
entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said
proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
	_____ Name of Surety
Witness _____	_____ Title

CONSENT OF SURETY

DATE _____

To: Capital School District
945 Forest Street
Dover, Delaware 19904

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 8 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

SECTION 00 52 00 - AGREEMENT

1. SUMMARY

1.1. The Agreement Form for this Project is either the American Institute of Architects Standard Form of Agreement between Owner and Contractor where the basis of payment is a Stipulated Sum 1992 Construction Manager – Advisor Edition AIA Document A101/CMa 1992 Edition.

1.2 A copy of A101/CMa – 1992 Edition is bound into this Project Manual following this page.

1.2.1 Under Article 5.8 add the following:

“Upon completion of the work under the Contract, the Owner may release 60% of the amount then retained. The balance of the amount retained will be held until:

- A. All reports required of the Contract are received;
- B. All Subcontractors in trades listed on the Bid Form are paid by the Contractor, unless the amount owed to the Subcontractor is disputed, in which case the Owner may withhold 150% of the amount withheld by the Contractor in its dispute with the Subcontractor; and
- C. Final payment is authorized by the Owner.”

END OF SECTION

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a STIPULATED SUM

1992 CONSTRUCTION MANAGER-ADVISER EDITION

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION.

The 1992 Edition of AIA Document A201/CMa, General Conditions of the Contract for Construction, Construction Manager-Adviser Edition, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

AGREEMENT

made as of the _____ day of _____ in the year of _____
(In words, indicate day, month and year.)

BETWEEN the Owner:

(Name and address)

Capital School District
945 Forest Street
Dover, Delaware 19904

and the Contractor:

(Name and address)

For the following Project:

(Include detailed description of Project, location, address and scope.)

New Dover High School

The Construction Manager is:

(Name and address)

EDiS Company
110 South Poplar Street, Suite 400
Wilmington, Delaware 19801

The Architect is:

(Name and address)

ABHA
1621 N. Lincoln Street
Wilmington, Delaware 19806

The Owner and Contractor agree as set forth below.

Copyright 1975, 1980, ©1992 by The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006-5292. Reproduction of the material herein or substantial quotation of its provisions without the written permission of the AIA violates the copyright laws of the United States and will subject the violator to legal prosecution.



ARTICLE 1
THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

ARTICLE 2
THE WORK OF THIS CONTRACT

The Contractor shall execute the entire Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others, or as follows:

ARTICLE 3
DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

3.1 The date of commencement is the date from which the Contract Time of Paragraph 3.2 is measured, and shall be the date of this Agreement, as first written above, unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement, if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

Unless the date of commencement is established by a notice to proceed issued by the Owner, the Contractor shall notify the Owner, through the Construction Manager, in writing not less than five days before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

3.2 The Contractor shall achieve Substantial Completion of the entire Work not later than

(Insert the calendar date or number of calendar days after the date of commencement. Also insert any requirements for earlier Substantial Completion of certain portions of the Work, if not stated elsewhere in the Contract Documents.)

Per contract documents.

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to complete on time.)

ARTICLE 4
CONTRACT SUM

4.1 The Owner shall pay the Contractor in current funds for the Contractor's performance of the Contract the Contract Sum of _____ Dollars (\$ _____), subject to additions and deductions as provided in the Contract Documents.

4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date until which that amount is valid.)

4.3 Unit prices, if any, are as follows:

ARTICLE 5 PROGRESS PAYMENTS

5.1 Based upon Applications for Payment submitted by the Contractor to the Construction Manager, and upon Project Applications and Certificates for Payment issued by the Construction Manager and Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

5.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

5.3 Provided an Application for Payment is submitted to the Construction Manager not later than the 25th day of a month, the Owner shall make payment to the Contractor not later than the 7th day of the month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment shall be made by the Owner not later than thirty (30) days after the Construction Manager receives the Application for Payment.

5.4 Each Application for Payment shall be based upon the Schedule of Values submitted by the Contractor in accordance with the Contract Documents. The Schedule of Values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager or Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

5.5 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

5.6 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

5.6.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the Work in the Schedule of Values, less retainage of five percent (5 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute may be included as provided in Subparagraph 7.3.7 of the General Conditions;

5.6.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of five percent (5 %);

5.6.3 Subtract the aggregate of previous payments made by the Owner; and

5.6.4 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or nullified a Certificate for Payment as provided in Paragraph 9.5 of the General Conditions.

5.7 The progress payment amount determined in accordance with Paragraph 5.6 shall be further modified under the following circumstances:

5.7.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to one hundred percent (100 %) of the Contract Sum, less such amounts as the Construction Manager recommends and the Architect determines for incomplete Work and unsettled claims; and

5.7.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Subparagraph 9.10.3 of the General Conditions.

5.8 Reduction or limitation of retainage, if any, shall be as follows:

(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Subparagraphs 5.6.1 and 5.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

In addition to retainage, 3.5% will be withheld for closeout documents.

This shall appear as a line item on the application for payment.

ARTICLE 6
FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when (1) the Contract has been fully performed by the Contractor except for the Contractor's responsibility to correct nonconforming Work as provided in Subparagraph 12.2.2 of the General Conditions and to satisfy other requirements, if any, which necessarily survive final payment; and (2) a final Project Certificate for Payment has been issued by the Construction Manager and Architect; such final payment shall be made by the Owner not more than 30 days after the issuance of the final Project Certificate for Payment, or as follows:

ARTICLE 7
MISCELLANEOUS PROVISIONS

7.1 Where reference is made in this Agreement to a provision of the General Conditions or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

7.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

(Usury laws and requirements under the Federal Truth in Lending Act, similar state and local consumer credit laws and other regulations at the Owner's and Contractor's principal places of business, the location of the Project and elsewhere may affect the validity of this provision. Legal advice should be obtained with respect to deletions or modifications, and also regarding requirements such as written disclosures or waivers.)

7.3 Temporary facilities and services:

(Here insert temporary facilities and services which are different from or in addition to those included elsewhere in the Contract Documents.)

7.4 Other Provisions:

(Here list any special provisions affecting the Contract.)

ARTICLE 8
TERMINATION OR SUSPENSION

- 8.1** The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of the General Conditions.
- 8.2** The Work may be suspended by the Owner as provided in Article 14 of the General Conditions.

ARTICLE 9
ENUMERATION OF CONTRACT DOCUMENTS

- 9.1** The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:
- 9.1.1** The Agreement is this executed Standard Form of Agreement Between Owner and Contractor, AIA Document A101/CMA, 1992 Construction Manager-Adviser Edition.
- 9.1.2** The General Conditions are the General Conditions of the Contract for Construction, AIA Document A201/CMA, 1992 Construction Manager-Adviser Edition.
- 9.1.3** The Supplementary and other Conditions of the Contract are those contained in the Project Manual dated _____, and are as follows:

Document	Title	Pages
Specification Section 00 73 00	Supplementary Conditions	17

- 9.1.4** The Specifications are those contained in the Project Manual dated as in Subparagraph 9.1.3, and are as follows:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Section	Title	Pages
----------------	--------------	--------------

9.1.5 The Drawings are as follows, and are dated
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

unless a different date is shown below:

Number	Title	Date
---------------	--------------	-------------

9.1.6 The Addenda, if any, are as follows:

Number	Date	Pages
---------------	-------------	--------------

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

9.1.7 Other documents, if any, forming part of the Contract Documents are as follows:

(List here any additional documents which are intended to form part of the Contract Documents. The General Conditions provide that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

- Contractor Proposal
- Bid Bond
- Letter of Intent
- Certificate of Insurance
- Performance and Payment Bonds

This Agreement is entered into as of the day and year first written above and is executed in at least four original copies of which one is to be delivered to the Contractor, one each to the Construction Manager and Architect for use in the administration of the Contract, and the remainder to the Owner.

OWNER

CONTRACTOR

(Signature)

(Signature)

(Printed name and title)

(Printed name and title)



CAUTION: You should sign an original AIA document which has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced. See Instruction Sheet for Limited License for Reproduction of this document.

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

SECTION 00 61 13 – BONDS

1. PAYMENT AND PERFORMANCE BONDS

1.1 Bonds must be in the following form:

1. Form of Payment Bond AIA Document A312 - 2010 (attached).
2. Form of Performance Bond AIA Document A312 - 2010 (attached).



AIA[®]

Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 18

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature: _____

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

Init.

User Notes:

(1819226442)

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

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

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

Init.

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

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

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

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

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

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

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

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

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____ (Corporate Seal)

Company: _____ (Corporate Seal)

Signature: _____

Signature: _____

Name and Title: _____

Name and Title: _____

Address: _____

Address: _____

Init.

Additions and Deletions Report for **AIA® Document A312™ – 2010**

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There are no differences.



AIA[®] Document A312[™] – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT

Date:
Amount: \$
Description:
(Name and location)

BOND

Date:
(Not earlier than Construction Contract Date)

Amount: \$
Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*

SURETY
Company: *(Corporate Seal)*

Signature: _____
Name and
Title:

Signature: _____
Name and
Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY -- Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

Init.

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

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

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

Init.

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

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

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

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

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

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

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

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

§ 14 Definitions

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

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

Init.

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

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____ (Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____ (Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

Init.

User Notes:

Additions and Deletions Report for AIA[®] Document A312[™] – 2010

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 14:49:35 on 03/30/2012.

There are no differences.

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

SECTION 00 62 16 – CERTIFICATE OF INSURANCE

In conjunction with Insurance Requirements AIA General Conditions, Article 11, the Contractor shall be bound by the following limits of liability insurance (for Contracts under this Bid Pac). The Contractor shall use the standard "ACCORD" for titled "Certificate of Insurance" in submitting his liability insurance limits. The required limits to be inserted in accordance with the sample "ACCORD" form in this section:

GENERAL NOTES

1. Other Insurance

1.1 Contractor shall carry any necessary insurance required to cover Owned and Rental equipment that may be necessary for them to use in the performance of the Work.

2. Contractor shall have the following additional items added to his required "ACCORD" form Certificate of Insurance:

1. Name and Address of Insured (Contractor).
2. Description of Operations/Locations.

3. Added Insured – Capital School District and EDiS Company

4. Certificate Holder – Capital School District

Contractors shall note that although not a part of AIA Document A201/CMA – 1992 Edition or A201 – 1992 Edition, these additional articles apply as noted to this Project.

A sample certificate is bound into the Project Manual immediately following this Document.

END OF SECTION

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)
XX/XX/XX

PRODUCER PRODUCER INSURANCE AGENCY PO BOX PRODUCER STREET ADDRESS PRODUCER CITY, ST PROD ZIP	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. INSURERS AFFORDING COVERAGE
INSURERD SAMPLE SUBCONTRACTOR CERTIFICATE (REQUIRED MINIMUM INSURANCE)	INSURER A: XXXXXX INSURED B: XXXXXX INSURER C: XXXXXX INSURER D: INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	DATE (MM/YY)	LIMITS	
	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR GENL AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	EACH OCCURRENCE	\$ 1,000,000
					FIRE DAMAGE (Any one fire)	\$ 300,000
					MED EXP (Any one person)	\$ 10,000
					PERSONAL & ADV INJURY	\$ 1,000,000
					GENERAL AGGREGATE	\$ 2,000,000
					PRODUCTS - COMP/OP AGG	\$ 2,000,000
	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
					BODILY INJURY (Per person)	\$
					BODILY INJURY (Per accident)	\$
					PROPERTY DAMAGE (Per accident)	\$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT	\$
					OTHER THAN: AUTO ONLY: EA ACC AGG	\$
	EXCESS LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE <input type="checkbox"/> RETENTION \$	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXX	EACH OCCURRENCE	\$ 5,000,000
					AGGREGATE	\$ 5,000,000
						\$
						\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER	\$
					E.L. EACH ACCIDENT	\$ 500,000
					E.L. DISEASE - EA EMPLOYEE	\$ 500,000
					E.L. DISEASE - POLICY LIMIT	\$ 500,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

Project: Capital School District, New Dover High School

Capital School District and EDiS Company shall be named as Additional Insured for both ongoing and completed operations. The endorsements providing the Additional Insured status for ongoing and completed operations must be attached to the Certificate of Insurance.

CERTIFICATE HOLDER ADDITIONAL INSURED; INSURER LETTER: _____ CANCELLATION

EDiS Company 110 South Poplar Street Suite 400 Wilmington, DE 19801	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30_ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. _____ AUTHORIZED REPRESENTATIVE
--	--

**Capital School District
New Dover High School
Bid Package 'H-1' Re-Bid**

SECTION 00 72 00 – GENERAL CONDITIONS

1. SUMMARY

- 1.1. The General Conditions for this Project is the American Institute of Architects A201/CMa – 1992 Edition form for General Conditions of the Contract for Construction.
- 1.2 A copy of AIA General Conditions for this Project is bound into this Project Manual following this page.

END OF SECTION

AIA[®] Document A201/CMa[™] – 1992

General Conditions of the Contract for Construction where the Construction Manager is NOT a Constructor

for the following PROJECT:

(Name and location or address):

New Dover High School
Preliminary Site Improvements
Dover, Delaware 19904

THE OWNER:

(Name and address):

Capital School District
945 Forest Road
Dover, Delaware 19904

THE ARCHITECT:

(Name and address):

ABHA
1621 N. Lincoln Street
Wilmington, Delaware 19806

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Construction Manager and Contractor, (3) between the Architect and Construction Manager, (4) between the Owner and a Subcontractor or Sub-subcontractor or (5) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors and by the Owner's own forces including persons or entities under separate contracts not administered by the Construction Manager.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

§ 1.2 EXECUTION, CORRELATION AND INTENT

§ 1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

§ 1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by 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.

§ 1.2.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

§ 1.3.1 The Drawings, Specifications and other documents prepared by the Architect are instruments of the Architect's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyright. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner and Architect. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's copyright or other reserved rights.

§ 1.4 CAPITALIZATION

§ 1.4.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.5 INTERPRETATION

§ 1.5.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

ARTICLE 2 OWNER

§ 2.1 DEFINITION

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner upon reasonable written request shall furnish to the Contractor in writing information which is necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein at the time of execution of the Agreement and, within five days after any change, information of such change in title, recorded or unrecorded.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 The Owner shall, at the request of the Contractor, prior to execution of the Agreement and promptly from time to time thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract.

[Note: Unless such reasonable evidence were furnished on request prior to the execution of the Agreement, the prospective contractor would not be required to execute the Agreement or to commence the Work.]

§ 2.2.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

§ 2.2.3 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit.

§ 2.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

§ 2.2.6 The Owner shall forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect.

§ 2.2.7 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Article 6 (Construction by Owner or by Other Contractors), Article 9 (Payments and Completion) and Article 11 (Insurance and Bonds).

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

§ 2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

§ 2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a second seven-day period. If the Contractor within such second seven-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Construction Manager's and Architect's and their respective consultants' additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect, after consultation with the Construction Manager. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 DEFINITION

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout this Agreement as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The plural term "Contractors" refers to persons or entities who perform construction under Conditions of the Contract that are administered by the Construction Manager, and that are identical or substantially similar to these Conditions.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Section 2.2.2 and shall at once report to the Construction Manager and Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner, Construction Manager or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency or omission and knowingly failed to report it to the Construction Manager and Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Construction Manager and Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

§ 3.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Construction Manager and Architect at once.

§ 3.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Section 3.12.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under this Contract, subject to overall coordination of the Construction Manager as provided in Sections 4.6.3 and 4.6.4.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

§ 3.3.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

§ 3.3.4 The Contractor shall inspect portions of the Project related to the Contractor's Work in order to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

§ 3.5 WARRANTY

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

§ 3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES AND NOTICES

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner shall secure and pay for the building permit and the Contractor shall secure and pay for all other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules and regulations and lawful orders of public authorities bearing on performance of the Work.

§ 3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Construction Manager, Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

§ 3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Construction Manager, Architect and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities against which the Contractor makes reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- .1 materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work;
- .2 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .3 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances;
- .4 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.2 and (2) changes in Contractor's costs under Section 3.8.2.3.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULE

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and the Construction Manager's approval a Contractor's Construction Schedule for the Work. Such schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project construction schedule to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict, delay in or interference with the Work of other Contractors or the construction or operations of the Owner's own forces.

§ 3.10.3 The Contractor shall prepare and keep current, for the Construction Manager's and Architect's approval, a schedule of submittals which is coordinated with the Contractor's Construction Schedule and allows the Construction Manager and Architect reasonable time to review submittals.

§ 3.10.4 The Contractor shall conform to the most recent schedules.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

§ 3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Construction Manager and Architect and shall be delivered to the Construction Manager for submittal to the Owner upon completion of the Work.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Section 4.6.12.

§ 3.12.5 The Contractor shall review, approve and submit to the Construction Manager, in accordance with the schedule and sequence approved by the Construction Manager, Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

§ 3.12.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Construction Manager and Architect. Such Work shall be in accordance with approved submittals.

§ 3.12.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Construction Manager's and Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Construction Manager and Architect in writing of such deviation at the time of submittal and the Construction Manager and Architect have given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Construction Manager's and Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals.

§ 3.12.10 Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents.

§ 3.12.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Construction Manager and Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

§ 3.13 USE OF SITE

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner's own forces or of other Contractors by cutting, patching, excavating or otherwise altering such construction. The Contractor shall not cut or otherwise alter such construction by other Contractors or by the Owner's own forces except with written consent of the Construction Manager, Owner and such other Contractors; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the other Contractors or the Owner the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Construction Manager may do so with the Owner's approval and the cost thereof shall be charged to the Contractor.

§ 3.16 ACCESS TO WORK

§ 3.16.1 The Contractor shall provide the Owner, Construction Manager and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES AND PATENTS

§ 3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner, Construction Manager and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by

negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section 3.18 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

§ 3.18.3 The obligations of the Contractor under this Section 3.18 shall not extend to the liability of the Construction Manager, Architect, their consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Construction Manager, Architect, their consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

§ 4.1 ARCHITECT

§ 4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

§ 4.2 CONSTRUCTION MANAGER

§ 4.2.1 The Construction Manager is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Construction Manager" means the Construction Manager or the Construction Manager's authorized representative.

§ 4.3 Duties, responsibilities and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Construction Manager, Architect and Contractor. Consent shall not be unreasonably withheld.

§ 4.4 In case of termination of employment of the Construction Manager or Architect, the Owner shall appoint a construction manager or architect against whom the Contractor makes no reasonable objection and whose status under the Contract Documents shall be that of the former construction manager or architect, respectively.

§ 4.5 Disputes arising under Sections 4.3 and 4.4 shall be subject to arbitration.

§ 4.6 ADMINISTRATION OF THE CONTRACT

§ 4.6.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representatives (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the correction period described in Section 12.2. The Construction Manager and Architect will advise and consult with the Owner and will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

§ 4.6.2 The Construction Manager will determine in general that the Work is being performed in accordance with the requirements of the Contract Documents, will keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

§ 4.6.3 The Construction Manager will provide for coordination of the activities of other Contractors and of the Owner's own forces with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other Contractors and the Construction Manager and Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed

necessary after a joint review and mutual agreement. The construction schedules shall constitute the schedules to be used by the Contractor, other Contractors, the Construction Manager and the Owner until subsequently revised.

§ 4.6.4 The Construction Manager will schedule and coordinate the activities of the Contractors in accordance with the latest approved Project construction schedule.

§ 4.6.5 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations as an architect, the Architect will keep the Owner informed of progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

§ 4.6.6 The Construction Manager, except to the extent required by Section 4.6.4, and Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Section 3.3, and neither will be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of or be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

§ 4.6.7 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall communicate through the Construction Manager, and shall contemporaneously provide the same communications to the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Construction Manager and shall be contemporaneously provided to the Architect.

§ 4.6.8 The Construction Manager will review and certify all Applications for Payment by the Contractor, including final payment. The Construction Manager will assemble each of the Contractor's Applications for Payment with similar Applications from other Contractors into a Project Application and Project Certificate for Payment. After reviewing and certifying the amounts due the Contractors, the Construction Manager will submit the Project Application and Project Certificate for Payment, along with the applicable Contractors' Applications and Certificates for Payment, to the Architect.

§ 4.6.9 Based on the Architect's observations and evaluations of Contractors' Applications for Payment, and the certifications of the Construction Manager, the Architect will review and certify the amounts due the Contractors and will issue a Project Certificate for Payment.

§ 4.6.10 The Architect will have authority to reject Work which does not conform to the Contract Documents, and to require additional inspection or testing, in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed, but will take such action only after notifying the Construction Manager. Subject to review by the Architect, the Construction Manager will have the authority to reject Work which does not conform to the Contract Documents. Whenever the Construction Manager considers it necessary or advisable for implementation of the intent of the Contract Documents, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.6.18 through 4.6.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.6.10 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.6.11 The Construction Manager will receive from the Contractor and review and approve all Shop Drawings, Product Data and Samples, coordinate them with information received from other Contractors, and transmit to the

Architect those recommended for approval. The Construction Manager's actions will be taken with such reasonable promptness as to cause no delay in the Work of the Contractor or in the activities of other Contractors, the Owner, or the Architect.

§ 4.6.12 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work of the Contractor or in the activities of the other Contractors, the Owner, or the Construction Manager, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.6.13 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 4.6.14 Following consultation with the Construction Manager, the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7 and will have authority to order minor changes in the Work as provided in Section 7.4.

§ 4.6.15 The Construction Manager will maintain at the site for the Owner one record copy of all Contracts, Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record all changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.6.16 The Construction Manager will assist the Architect in conducting inspections to determine the dates of Substantial Completion and final completion, and will receive and forward to the Architect written warranties and related documents required by the Contract and assembled by the Contractor. The Construction Manager will forward to the Architect a final Project Application and Project Certificate for Payment upon compliance with the requirements of the Contract Documents.

§ 4.6.17 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.6.18 The Architect will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of the Construction Manager, Owner or Contractor. The Architect's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Section 4.6, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

§ 4.6.19 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.6.20 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.7 CLAIMS AND DISPUTES

§ 4.7.1 Definition. A Claim 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, 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 Owner and Contractor arising out of or relating to the Contract. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 4.7.2 Decision of Architect. Claims, including those alleging an error or omission by the Construction Manager or Architect, shall be referred initially to the Architect for action as provided in Section 4.8. A decision by the Architect, as provided in Section 4.8.4, shall be required as a condition precedent to arbitration or litigation of a Claim between the Contractor and Owner as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to arbitration or litigation in the event (1) the position of Architect is vacant, (2) the Architect has not received evidence or has failed to render a decision within agreed time limits, (3) the Architect has failed to take action required under Section 4.8.4 within 30 days after the Claim is made, (4) 45 days have passed after the Claim has been referred to the Architect or (5) the Claim relates to a mechanic's lien.

§ 4.7.3 Time Limits on Claims. Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

§ 4.7.4 Continuing Contract Performance. Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 4.7.5 Waiver of Claims: Final Payment. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 4.7.6 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Section 4.8.

§ 4.7.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with the procedure established herein.

§ 4.7.8 Claims for Additional Time.

§ 4.7.8.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 4.7.8.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.

§ 4.7.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Sections 4.7.7 or 4.7.8.

§ 4.8 RESOLUTION OF CLAIMS AND DISPUTES

§ 4.8.1 The Architect will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Architect expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

§ 4.8.2 If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

§ 4.8.3 If a Claim has not been resolved, the party making the Claim shall, within ten days after the Architect's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Architect, (2) modify the initial Claim or (3) notify the Architect that the initial Claim stands.

§ 4.8.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days, which decision shall be final and binding on the parties but subject to arbitration. Upon expiration of such time period, the Architect will render to the parties the Architect's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there is a surety and there appears to be a possibility of a Contractor's default, the Architect may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 4.9 ARBITRATION

§ 4.9.1 Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect and except those waived as provided for in Section 4.7.5. Such controversies or Claims upon which the Architect has given notice and rendered a decision as provided in Section 4.8.4 shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Architect as provided in Section 4.7 and no decision has been rendered.

§ 4.9.2 Rules and Notices for Arbitration. Claims between the Owner and Contractor not resolved under Section 4.8 shall, if subject to arbitration under Section 4.9.1, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect, unless the parties mutually agree otherwise. Notice of demand for arbitration shall be filed in writing with the other party to the Agreement between the Owner and Contractor and with the American Arbitration Association, and copies shall be filed with the Construction Manager and Architect.

§ 4.9.3 Contract Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall comply with Section 4.7.4.

§ 4.9.4 When Arbitration May Be Demanded. Demand for arbitration of any Claim may not be made until the earlier of (1) the date on which the Architect has rendered a final written decision on the Claim, (2) the tenth day after the parties have presented evidence to the Architect or have been given reasonable opportunity to do so, if the Architect has not rendered a final written decision by that date, or (3) any of the five events described in Section 4.7.2.

§ 4.9.4.1 When a written decision of the Architect states that (1) the decision is final but subject to arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

§ 4.9.4.2 A demand for arbitration shall be made within the time limits specified in Sections 4.9.1 and 4.9.4 and Section 4.9.4.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Section 13.7.

§ 4.9.5 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the Construction Manager, the Architect, or the Construction Manager's or Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Construction Manager, Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, other Contractors as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No persons or entities other than the Owner, Contractor or other Contractors as defined in Section 3.1.2 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 4.9.6 Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

§ 4.9.7 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Contractors or subcontractors of other Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

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

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Construction Manager for review by the Owner, Construction Manager and Architect the names of persons or entities (including those who are to furnish

materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Construction Manager will promptly reply to the Contractor in writing stating whether or not the Owner, Construction Manager or Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Construction Manager to reply promptly shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. 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. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such change.

§ 5.3 SUBCONTRACTUAL RELATIONS

§ 5.3.1 By appropriate agreement, written where legally required for validity, 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 terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

§ 5.4.2 If the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION WITH OWN FORCES AND TO AWARD OTHER CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, which include persons or entities under separate contracts not administered by the Construction Manager. The Owner further reserves the right to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces including persons or entities under separate contracts not administered by the Construction Manager, the Owner shall provide for coordination of such forces with the Work of the Contractor, who shall cooperate with them.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in this Article 6 and in Articles 3, 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner's own forces, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager and Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's own forces or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

§ 6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed construction or partially completed construction or to property of the Owner or other Contractors as provided in Section 10.2.5.

§ 6.2.5 Claims and other disputes and matters in question between the Contractor and other Contractors shall be subject to the provisions of Section 4.7 provided the other Contractors have reciprocal obligations.

§ 6.2.6 The Owner and other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

§ 6.3.1 If a dispute arises among the Contractor, other Contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Section 3.15, the Owner may clean up and allocate the cost among those responsible as the Construction Manager, in consultation with the Architect, determines to be just.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 CHANGES

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor; a Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect and Contractor, stating their agreement upon all of the following:

- .1 a change in the Work;
- .2 the amount of the adjustment in the Contract Sum, if any; and
- .3 the extent of the adjustment in the Contract Time, if any.

§ 7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Section 7.3.3.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 as provided in Section 7.3.6.

§ 7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager and Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Construction Manager on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.6 shall be limited to the following:

- .1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance;
- .2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

- .4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Construction Manager for determination.

§ 7.3.9 When the Owner and Contractor agree with the determination made by the Construction Manager concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately issued through the Construction Manager and shall be recorded by preparation and execution of an appropriate Change Order.

§ 7.4 MINOR CHANGES IN THE WORK

§ 7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order issued through the Construction Manager and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner's own forces, Construction Manager, Architect, any of the other Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by other causes which

the Architect, based on the recommendation of the Construction Manager, determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Section 4.7.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for 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 Architect, through the Construction Manager, a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment for Work completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner, Construction Manager or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents.

§ 9.3.1.1 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

§ 9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the 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 applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Construction Manager will assemble a Project Application for Payment by combining the Contractor's applications with similar applications for progress payments from other Contractors and, after certifying the amounts due on such applications, forward them to the Architect within seven days.

§ 9.4.2 Within seven days after the Architect's receipt of the Project Application for Payment, the Construction Manager and Architect will either issue to the Owner a Project Certificate for Payment, with a copy to the Contractor, for such amount as the Construction Manager and Architect determine is properly due, or notify the Contractor and Owner in writing of the Construction Manager's and Architect's reasons for withholding

certification in whole or in part as provided in Section 9.5.1. Such notification will be forwarded to the Contractor by the Construction Manager.

§ 9.4.3 The issuance of a separate Certificate for Payment or a Project Certificate for Payment will constitute representations made separately by the Construction Manager and Architect to the Owner, based on their individual observations at the site and the data comprising the Application for Payment submitted by the Contractor, that the Work has progressed to the point indicated and that, to the best of the Construction Manager's and Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Construction Manager or Architect. The issuance of a separate Certificate for Payment or a Project Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a separate Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Construction Manager or Architect may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager or Architect will notify the Contractor and Owner as provided in Section 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Construction Manager and Architect will promptly issue a Certificate for Payment for the amount for which the Construction Manager and Architect are able to make such representations to the Owner. The Construction Manager or Architect may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss because of:

- .1 defective Work not remedied;
- .2 third party claims filed 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 the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
or
- .7 persistent failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Construction Manager and Architect have issued a Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 Neither the Owner, Construction Manager nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.7 FAILURE OF PAYMENT

§ 9.7.1 If, through no fault of the Contractor, 1) the Construction Manager and Architect do not issue a Project Certificate for Payment within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment or 2) the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Construction Manager and Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and 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 accomplished as provided in Article 7.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. 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 Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

§ 9.8.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Construction Manager and Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.11 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments,

retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager will forward the notice and Application to the Architect who will promptly make such inspection. When the Architect, based on the recommendation of the Construction Manager, finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for 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 terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, 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 Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims. The making of final payment shall constitute a waiver of Claims by the Owner as provided in Section 4.4.5.

§ 9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. Such waivers shall be in addition to the waiver described in Section 4.7.5.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors.

§ 10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner, Construction Manager and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which arbitration has not been demanded, or by arbitration under Article 4.

§ 10.1.3 The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

§ 10.1.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 10.1.4.

§ 10.1.5 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner, Construction Manager and Architect in writing. The Owner, Contractor, Construction Manager and Architect shall then proceed in the same manner described in Section 10.1.2.

§ 10.1.6 The Owner shall be responsible for obtaining the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

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

- .1 employees on the Work and other persons who may be affected thereby;

- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and
- .4 construction or operations by the Owner or other Contractors.

§ 10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, 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 sites and utilities.

§ 10.2.4 When use for storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4, except damage or loss attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

§ 10.3 EMERGENCIES

§ 10.3.1 In an emergency affecting safety or persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Section 4.7 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a 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 compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
- .2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another 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;
- .6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
- .7 claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Section 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

§ 11.2 OWNER'S LIABILITY INSURANCE

§ 11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

§ 11.3.1.1 Property insurance shall be on an "all-risk" policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, falsework, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's services and expenses required as a result of such insured loss. Coverage for other perils shall not be required unless otherwise provided in the Contract Documents.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles above the amounts so identified or if the Owner elects to purchase this

insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles.

§ 11.3.1.4 Unless otherwise provided in the Contract Documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

§ 11.3.1.5 The insurance required by this Section 11.3 is not intended to cover machinery, tools or equipment owned or rented by the Contractor which are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment which shall be subject to the provisions of Section 11.3.7.

§ 11.3.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Construction Manager, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other perils covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 Waivers of Subrogation. The Owner and Contractor waive all rights against each other and against the Construction Manager, Architect, Owner's other Contractors and own forces described in Article 6, if any, and the subcontractors, sub-subcontractors, consultants, agents and employees of any of them, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as the Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, Owner's separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of

insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Section 4.9. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection be made, arbitrators shall be chosen as provided in Section 4.9. The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

§ 11.3.11 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by either, be uncovered for their observation and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered which the Construction Manager or Architect has not specifically requested to observe prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or one of the other Contractors in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby.

§ 12.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial

Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this Section 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

§ 12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 2.4. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Architect issued through the Construction Manager, the Owner may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

§ 12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or other Contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

§ 12.2.6 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the 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 the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

§ 12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

§ 13.1.1 The Contract shall be governed by the law of the place where the Project is located.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.3 WRITTEN NOTICE

§ 13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Construction Manager, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so the Construction Manager and Architect may observe such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

§ 13.5.2 If the Construction Manager, Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so the Construction Manager and Architect may observe such procedures. The Owner shall bear such costs except as provided in Section 13.5.3.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.5.5 If the Construction Manager or Architect is to observe tests, inspections or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

§ 13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

§ 13.7.1 As between the Owner and Contractor:

- .1 Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;
- .2 Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and
- .3 After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to

run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Section 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Section 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contract may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

- .1 issuance of an order of a court or other public authority having jurisdiction;
- .2 an act of government, such as a declaration of national emergency, making material unavailable;
- .3 because the Construction Manager or Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.2, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;
- .4 if repeated suspensions, delays or interruptions by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less; or
- .5 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

§ 14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.2.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor:

- .1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 accept assignment of subcontracts pursuant to Section 5.4; and
- .3 finish the Work by whatever reasonable method the Owner may deem expedient.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Architect after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance, caused by suspension, delay or interruption. No adjustment shall be made to the extent:

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.3.3 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

SECTION 007300 - SUPPLEMENTARY CONDITIONS

1. GENERAL CONDITIONS

1.1. The General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, AIA Document A201/CMa - 1992 Edition, Articles 1 through 14 inclusive, is a part of this contract and is bound herewith.

1.2. References to Articles herein are to Articles in A201/CMa – 1992 Edition.

2. SUPPLEMENTARY CONDITIONS

2.1. The following provisions modify, change, delete from or add to AIA Document A201/CMa - 1992 Edition. Where any article of the General Conditions is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these provisions, the unaltered provisions of that article, paragraph, sub-paragraph or clause shall remain in effect.

3. REFERENCE TO DIVISION 1 - GENERAL REQUIREMENTS

3.1. Certain provisions of Division 1 GENERAL REQUIREMENTS supplement the administrative and work-related provisions of the GENERAL CONDITIONS.

3.2. Articles affected are cross referenced in the various Sections of Division 1.

3.3. ARTICLE 1 - GENERAL PROVISIONS

A. Paragraph 1.1 - Basic Definitions

Add the following paragraph 1.1.1:

“The Contract Documents also include Advertisement for Bid, Instructions to Bidder, sample forms, the Bid Form, the Contractor’s completed Bid and the Award Letter.”

Add the following subparagraph:

1.1.8 Terms and Definitions

The following definitions apply to the terms listed below as used on the Drawings and in the Project Manual:

Provide: Furnish and Install

Approved: Approved by Architect or authority enforcing standards

Described: Refer to Project Manual

Specified: Refer to Project Manual

Shown: Refer to Drawings

Add the following subparagraph:

1.3.2 The Contractor will be furnished free of charge up to five (5) sets of the Drawings and Project Manual. Additional sets will be furnished at the cost of reproduction, postage, and handling.

3.4 ARTICLE 2 – OWNER

A. To Subparagraph 2.2.3 – Add the following sentence:

“The Contractor, at their expense shall bear the costs to accurately identify the location of all underground utilities in the area of their excavation and shall bear all costs for any repairs required, out of failure to accurately identify said utilities.”

B. Delete Subparagraph 2.2.5 in its entirety and substitute the following:

2.2.5 The Contractor shall be furnished free of charge up to two (2) sets of the Drawings and Project Manuals. As well as an electronic version for their use.

3.5 ARTICLE 3 – CONTRACTOR

A. Paragraph 3.1 - Definition

Sub-paragraph 3.1.1: Add the following sentences:

“This definition applies to each Contractor having an agreement with the Owner.”

“The duties and obligations of the Contract apply to this Contractor (as defined herein) regardless of similar or identical duties or obligations of other Prime Contracts related to the Project. Therefore, even though other Prime Contractors may have similar, identical or overlapping duties and obligations, each and every duty and obligation set forth in this Contract is enforceable against this Contractor.”

B. Amend Paragraph 3.2.2 to state the any errors, inconsistencies or omissions discovered shall be reported to the Architect and Owner immediately.

- C. Delete the third sentence in Paragraph 3.2.3.
- D. Add the following Paragraphs:
- 3.3.2.1 The Contractor shall immediately remove from the Work, whenever requested to do so by the Owner, any person who is considered by the Owner or Architect to be incompetent or disposed to be so disorderly, or who for any reason is not satisfactory to the Owner, and that person shall not again be employed on the Work without the consent of the Owner or Architect.
- E. Paragraph 3.4 - Labor and Materials:
- Add the following Paragraphs:
- 3.4.3 The Contractor must provide suitable storage facilities at the Site for the proper protection and safe storage of their materials. Consult the Owner and the Architect before storing any materials.
- 3.4.4 When any room is used as a shop, storeroom, office, etc., by the Contractor or Subcontractor(s) during the construction of the Work, the Contractor making use of these areas will be held responsible for any repairs, patching or cleaning arising from such use.
- 3.4.5 Refer to Division 1 for detailed requirements concerning Temporary Facilities and Equipment.
- 3.4.6 Before starting the Work, each Contractor shall carefully examine all preparatory Work that has been executed to receive their Work. Check carefully, by whatever means are required, to insure that its Work and adjacent, related Work, will finish to proper contours, planes and levels. Promptly notify the General Contractor/Construction Manger of any defects or imperfections in preparatory Work which will in any way affect satisfactory completion of its Work. Absence of such notification will be construed as an acceptance of preparatory Work and later claims of defects or requests for adjustment of the Contract Sum will be denied.
- 3.4.7 Under no circumstances shall the Contractor's Work proceed prior to preparatory Work having been completely cured, dried and/or otherwise made satisfactory to receive this Work. Responsibility for timely installation of all materials

rests solely with the Contractor responsible for the Work, who shall maintain coordination at all times.

F. Paragraph 3.5 - Warranty:

Add the following Paragraphs:

3.5.2 The Contractor will guarantee all materials and workmanship against original defects, except injury from proper and usual wear when used for the purpose intended, for one year after Acceptance by the Owner, and will maintain all items in perfect condition during the period of guarantee.

3.5.3 Defects appearing during the period of guarantee will be made good by the Contractor, at his sole expense, upon demand of the Owner, it being required that all work will be in perfect condition when the period of guarantee will have elapsed.

3.5.4 In addition to the General Guarantee there are other guarantees required for certain items for different periods of time than the one year above, and are particularly so stated in the part of the specifications referring to same. The said guarantees will commence at the same time as the General Guarantee.

3.5.5 If the Contractor fails to remedy any failure, defect or damage within a reasonable time after receipt of notice, the Owner will have the right to replace, repair or otherwise remedy the failure, defect or damage at the Contractor's expense.

G. Paragraph 3.7 - Permits, Fees and Notices

Add the following subparagraphs:

3.7.5 Where the local law at the site of the building requires a Certificate of Occupancy, the Construction Manager shall obtain and pay for this Certificate through the Owner and deliver it to the Owner.

3.7.6 The general building permit for all components of the entire project will be obtained from the applicable authority and paid for by the Owner through the Construction Manager.

H. Paragraph 3.12 - Shop Drawings, Product Data and Samples

Add the following subparagraph:

3.12.12 Refer to Section 013300, SUBMITTALS, for detailed requirements.

I. 3.15 - Cleaning Up

Add the following subparagraph:

3.15.3 Refer to Section 011100, SUMMARY OF WORK, for detailed requirements.

3.6 ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

A. Paragraph 4.1 - Architect

Add the following Subparagraph:

4.1.2 The Architect will have no full-time project representative on this project.

Delete Paragraph 4.5 in its entirety and replace with the following:

4.5 The Architect will approve or reject Claims by Written decision, which shall state the reasons therefore and 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 Architect shall be subject to mediation and other remedies at law as herein set forth.

3.7 ARTICLE 5 - SUBCONTRACTORS

A. Paragraph 5.2 - Awards of Subcontracts and Other Contracts for Portions of the Work.

Delete subparagraph 5.2.3 in its entirety and replace with the following:

5.2.3 If the Owner or Construction Manager has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Construction Manager has no reasonable objection, subject to the statutory requirements of 29 Delaware Code 6962(d)(10)b.3,4.

Add the following subparagraph:

5.2.5 Delaware State law provisions concerning naming and use of Subcontractors supersede any foregoing provisions of

Paragraph 5.2 where such provisions are in conflict with Delaware State Law. Refer to provisions in Section 002113 INSTRUCTIONS TO BIDDERS.

3.8 ARTICLE 6 - CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS

A. Paragraph 6.1 - Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

Add the following subparagraph:

6.1.4 Refer to Section 011100, SUMMARY OF WORK, for detailed requirements.

B. Paragraph 6.2 - Mutual Responsibility

Delete Subparagraph 6.2.5 in its entirety and substitute the following:

6.2.5 Should the Contractor, any Subcontractor, or Sub-subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts any of them may be liable, cause damage to the work of property of any separate Contractor on the project, or should such separate Contractor or interested party sustain loss or damaged due to acts or omissions on the part of the Contractor any Subcontractor or Sub-subcontractor, any one directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the Contractor shall, upon due notice settle with such other Contractors by agreement or arbitration, if he will so settle. Contractor shall use all reasonable means to resolve the matter quickly. If such separate Contractor sues the Owner, Construction Manager, or Architect, or initiates an arbitration proceeding on account of any damages alleged to have been so sustained, the Owner, Construction Manager, or Architect shall notify the Contractor, who shall indemnify them and defend such proceedings at the Owner, Construction Manager, or Architect's expense. If any judgment against the Owner, Construction Manager, or Architect arises therefrom, the Contractor shall pay or satisfy it, together with all fees, costs, expenses, disbursements, or liabilities related thereto. The Contractor shall also reimburse the Owner, Construction Manager, or Architect for all attorney's fees and court or arbitration costs which the Owner, Construction Manager, or Architect has incurred.

3.9 ARTICLE 7 - CHANGES IN THE WORK

A. Paragraph 7.2 - Change Orders

Add the following subparagraphs:

7.2.3 See Section 012600, CHANGE ORDER PROCEDURES, for detailed requirements.

7.2.4 In the event that work is performed under the provisions of paragraph 7.33, the Owner will reimburse the Contractor for all costs directly incurred in the performance of the Work, plus overhead and profit as follows: Costs shall include the cost of materials including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; bond premiums, rental value of power tools, equipment and machinery. Overhead shall include the following: supervision, superintendent, wages of time keepers, watchmen and clerks, hand tools, incidentals, general office expense, and all other expenses not included in "cost". All such overhead shall be directly attributable to the change. As applied to Change Orders, overhead and profit shall be as follows:

1. For extra work performed by the Contractor with his own forces, 10% for overhead and 5% for profit.
2. For work done by a subcontractor, 10% for overhead and 5% for profit to which the Contractor may add an additional 7.5% for his overhead and profit combined.
3. For work deleted by a Change Order or where reductions in costs are involved, no item for overhead or profit shall be included in the computation. Change Orders shall have additions and deductions figured separately without overhead and profit added. The smaller amount shall then be deducted from the larger to determine the net value of the change. If the net results in an addition to the Contract Sum, the above overhead and profit items shall be added to the net increase only.

3.10 ARTICLE 8 - TIME

A. Paragraph 8.2 - Progress and Completion

Delete subparagraph 8.2.3 in its entirety and substitute the following:

8.2.3 Refer to Section 011100 SUMMARY OF WORK and Section 013216, SCHEDULING, for detailed requirements. Work

shall commence immediately upon the Contractors receipt of a letter of intent from the Construction Manager.

8.2.4 The Contractor guarantees and warrants that there will be sufficient tradesmen on the job each day to ensure that there will be no interruption of work. If the Construction Manager in his sole discretion decides that the work and the progress of the job has been impeded because of the Contractor's inability to supply tradesmen for the job, the Construction Manager may terminate the contract with forty-eight (48) hours notice.

8.2.5 If the Work falls behind Progress Schedule as submitted by the Contractor, the Contractor shall employ additional labor and/or equipment necessary to bring the Work into compliance with the Progress Schedule at no additional cost to the Owner.

B. Paragraph 8.3 – Delays and Extensions of Time

Add the following subparagraph:

8.3.2.1 The Contractor shall update the status of the suspension, delay or interruption of the Work with each Application for Payment. (The Contractor shall report the termination of such cause immediately upon the termination thereof.) Failure to comply with this procedure shall constitute a waiver for any claim for adjustment of time or price based upon said cause.

Delete Paragraph 8.3.3 in its entirety and replace with the following:

8.3.3 Except in the case of a suspension of the Work directed by the Owner, an extension of time under the provisions of Paragraph 8.3.1 shall be the Contractor's sole remedy in the progress of the Work and there shall be no payment or compensation to the Contractor for any expense or damage resulting from the delay.

Add the following Paragraph:

8.3.4 By permitting the Contractor to work after the expired time for completion of the project, the Owner does not waive its rights under the Contract.

3.11 ARTICLE 9 - PAYMENTS AND COMPLETION

A. Paragraph 9.2 - Schedule of Values

Add the following sentence to subparagraph 9.2.1:

"Refer to Section 013300, SUBMITTALS, for submittal requirements."

Add the following subparagraphs:

9.2.2 The Schedule of Values shall be submitted using AIA Document G702, Continuation Sheet to G703.

9.2.3 The Schedule of Values is to include a line item for Project Closeout Document Submittal. The value of this item is to be no less than 3.5% of the initial contract amount.

B. Paragraph 9.3 - Applications for Payment

Add the following Subparagraphs:

9.3.4 Until Closeout Documents have been received and outstanding items completed, the Owner will pay 95% (ninety-five percent) of the amount due the Contractor on account of progress payments.

C. Paragraph 9.5 – Decisions to Withhold Certification

Add the following to 9.5.1:

failure to provide a current Progress Schedule;
a lien or attachment is filed;
failure to comply with mandatory requirements for maintaining Record Documents.

D. Paragraph 9.6 - Progress Payments

Delete subparagraph 9.6.1 in its entirety and replace with the following:

9.6.1 After the Architect has approved and issued a Certificate for Payment, payment shall be made by the Owner within 30 days after Owner's receipt of the Certificate of Payment.

3.12 Article 10 – Protection of Persons and Property

A. 10.1 SAFETY PRECAUTIONS AND PROGRAMS

Add the following Paragraphs:

10.1.2 Contractor shall develop a safety program in accordance with the Occupational Safety and Health Act of 1970. A copy of said plan shall be furnished to the Owner and Architect prior to the commencement of that Contractor's Work.

10.1.3 Contractor shall appoint a Safety Representative. Safety Representatives shall be someone who is on site on a full time bases. If deemed necessary by the Owner or Architect, Contractor Safety meetings will be scheduled. The attendance of all Safety Representatives will be required. Minutes will be recorded of said meeting by the Contractor and will be distributed to all parties as well as posted in all job offices/trailers etc.

3.13 ARTICLE 11 - INSURANCE

A. Paragraph 11.1.: Contractor's Liability Insurance

Subparagraph 11.1.1: Make the following change:

11.1.1 In the first line following the word "maintain" insert the words "in a company or companies licensed to do business in the state of Delaware....".

B. Subparagraph 11.1.2: Delete entirely and insert the following:

11.1.2 "The insurance required by subparagraph 11.1.1 shall be written for not less than the following or as required by law, whichever is greater.

In conjunction with Insurance Requirements AIA General Conditions, Article 11, the Contractor shall be bound by the following limits of liability insurance (for contracts under this bid pac). The Contractor shall use the standard "ACCORD" form titled "Certificate of Insurance" in submitting his liability insurance limits. The required limits to be inserted in the "ACCORD" form are as follows:

The Contractor shall purchase and maintain at all times throughout the term of this Agreement without interruption and, at the least, from the date of the commencement of the Work until the date of final payment or the date insurance coverage is required to be maintained after final payment to the Contractor under this Agreement, whichever is later, the following insurance coverages (with the specified limits of liability) and shall provide to the Construction Manager the complete policies for such insurance coverages upon the request of the Construction Manager:

- 11.1.2.1 Commercial General Liability (“CGL”) coverage with limits of not less than \$1,000,000 each occurrence and \$2,000,000 in the "annual aggregate".
 - 11.1.2.1.1 If the CGL coverage contains a “General Aggregate Limit”, such General Aggregate Limit shall apply separately to each project of the Contractor, specifically including this Project.
 - 11.1.2.1.2 CGL coverage shall be written on ISO Occurrence Form CG 00 011093, or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, independent contractors, product-completed operations and personal and advertising injury.
 - 11.1.2.1.3 EDiS Company, Owner and all other parties required by EDiS Company shall be included as additional insureds on the CGL using Additional Insured Endorsements that provide coverage for both ongoing and completed operations. The insurance for the additional insureds shall be as broad as the coverage provided for the named insured Contractor. The CGL coverage shall apply as Primary and non-contributory insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, any additional insured other than the other insurances coverages purchased and maintained by the Contractor hereunder.
 - 11.1.2.1.4 Contractor shall maintain CGL coverage for itself and all additional insureds for the duration of the Project and maintain Completed Operations coverage for itself and each additional insured for at least three (3) years after completion of the Work, using Additional Insured Endorsements that provide Completed Operations Coverage.
- 11.1.2.2. Business Automobile Liability (“BAL”) coverage with combined single limits of at least \$1,000,000 (per occurrence).

- 11.1.2.2.1 BAL coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.
- 11.1.2.2.2 BAL coverage shall be written on an occurrence basis.
- 11.1.2.2.3 Construction Manager, Owner and all other parties required by the Construction Manager shall be included as additional insureds on the BAL coverage. The insurance for the additional insureds shall be as broad as the coverage provided for the named insured Contractor. The BAL coverage shall apply as Primary and non-contributory insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, any additional insured other than the other insurances coverages purchased and maintained by the Contractor hereunder.
- 11.1.2.3. Commercial Umbrella ("CU") coverage with limits of at least \$5,000,000.
 - 11.1.2.3.1 CU coverage shall be written on an occurrence basis.
 - 11.1.2.3.2 Construction Manager, Owner and all other parties required by the Construction Manager shall be included as additional insureds on the CU coverage for both ongoing and Completed Operations. The insurance for the additional insureds shall be as broad as the coverage provided for the named insured Contractor. The CU coverage shall apply as Primary and non-contributory insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, any additional insured other than the other insurances coverages purchased and maintained by the Contractor hereunder.
- 11.1.2.4 Workers' Compensation shall be maintained to protect against claims under the workers' compensation act with limits of at least \$500,000 for each accident. Employers'

Liability coverage will also be maintained with limits of at least \$500,000 for each accident for bodily injury including death and disease.

11.1.2.4.1 WCEL coverage shall be written on an occurrence basis.

11.1.2.4.2 Where applicable and/or as required by the construction manager, the U.S. Longshoremen and Harborworkers' Compensation Act endorsement shall be included as part of the WCEL coverage and attached to the policy for WCEL coverage.

11.1.2.4.3 Where applicable and/or as required by the Construction Manager, the Maritime Coverage Endorsement shall be included as part of the WCEL coverage and attached to the policy for WCEL coverage.

11.1.2.5 The Contractor shall provide property insurance necessary for the protection against loss of owned, rented or borrowed capital equipment and tools, including tools owned by employees, and any tools, equipment staging towers and forms owned, rented or borrowed by the Subcontractor. The property insurance shall include a Waiver of Subrogation in favor of all parties required to be named as Additional Insureds under the Contract Documents. Contractor shall ensure that any subcontractor employed by him similarly carries sufficient insurance to protect that subcontractor's property.

11.1.2.6 Contractor waives all rights against the Construction Manager, Owner and all their agents, officers, directors and employees for recovery of damages to the extent those damages are covered by any of the insurance coverages purchased and maintained by the Contractor.

11.1.2.7 Contractor shall provide the Construction Manager with appropriate certificates of insurance coverages evidencing that the insurance coverages required herein are valid and in full force and effect at least thirty (30) days before the Contractor performs any Work and before the Contractor or any of its agents, subcontractors or employees enters upon the job site. Each such certificate of insurance and the actual insurance policy for each insurance coverage required herein shall contain a provision that the coverage and protection afforded under the policy will not be canceled or

- modified or allowed to expire without at least thirty (30) days' prior written notice to the Construction Manager.
- 11.1.2.8 Each policy of insurance coverage purchased and maintained by the Contractor herein shall be so purchased and maintained from or by an insurance company properly and fully authorized and licensed to do business and to issue policies of insurance in the state in which the Project is located.
- 11.1.2.9 Each policy of insurance coverage purchased and maintained by the Contractor herein shall provide that the insurer shall defend any suit or action against the Construction Manager, Owner and/or their agents, officers, directors and employees and hold them harmless, even if such suit or action is frivolous or fraudulent. Such policy also shall provide the Construction Manager and Owner the right to engage their/its own attorney(s) for the purpose of defending any legal action against the Construction Manager, Owner and their agents, officers, directors and employees, and that the Contractor shall indemnify and hold harmless the Construction Manager, Owner, and their agents, officers, directors and employees, for costs and expenses, including attorney's fees, arising out of or incurred in defending such suit or action.
- 11.1.2.10 The purchase, maintenance or issuance of insurance coverage of any type by the Contractor or the Construction Manager or Owner as required herein or otherwise, shall not be deemed or construed to release, limit, waive or discharge the Contractor from any or all of the obligations and risks imposed by the Agreement upon the Contractor. Neither shall any forbearance nor omission by the Construction Manager to require proof of insurance coverages or certificates of insurance or to obtain or review any policies of insurance coverage from the Contractor before permitting the Contractor to proceed or continue with the Work be deemed a waiver of the Construction Manager's rights or the Contractor's obligations regarding the provision of insurance coverage under this Agreement.
- 11.1.2.11 Waiver of Subrogation. Subcontractor hereby waives any and all rights of recovery against the Construction Manager, Owner and their respective officers, members, agents, employees, and insurance companies occurring on or arising out of Contractor's Work to the extent such loss or damage is covered by proceeds received from insurance required under this Agreement to be carried by the Contractor.

11.1.2.12 Contractor hereby certifies that it has furnished to its insurance provider(s) a copy or copies of the foregoing insurance requirements (all the applicable requirements of Section 9. hereof) ("requirements"), and Contractor, for and on behalf of itself and its insurance provider(s), certifies and agrees that all insurance coverages (including but not limited to the types, limits, periods of coverage, endorsements and policies applicable or in regard thereto) provided to the Construction Manager hereunder are in accordance and full compliance with the requirements, as reasonably determined and interpreted by the Construction Manager. Contractor, to the fullest extent permitted by applicable law, shall defend, indemnify and save harmless the Construction Manager, Owner and their respective successors, assigns, directors, officers, agents and employees from and against any and all damages and losses, without limitation, including attorneys' fees and costs caused by, arising out of or resulting from the Contractor or its insurance provider(s) refusal or failure to provide all the insurance coverages (including but not limited to the types, limits, periods of coverage, endorsements and policies applicable or in regard thereto) required hereunder, to comply in any respect with the requirements, and/or to fully honor and abide by any of the certifications and/or agreements set forth in this section.

3.14 ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.2 Correction of Work

Add the following Subparagraph to 12.2.2:

12.2.2.1 At any time during the progress of the Work, or in any case where the nature of the defects will be such that it is not expedient to have the defects corrected, the Owner, at its option, will have the right to deduct such sum, or sums, of money from the amount of the Contract as it considers justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

3.15 ARTICLE 13: MISCELLANEOUS PROVISIONS

Add the following Paragraph:

13.8 CONFLICTS WITH FEDERAL STATUTES OR REGULATIONS

13.8.1 If any provision, specifications or requirement of the Contract Documents conflict or is inconsistent with any statute, law or regulation of the government of the United States of America, the Contract shall notify the Architect and Owner immediately upon discovery.

3.16 ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.3 TERMINATION BY THE OWNER FOR CONVENIENCE

Delete Paragraph 14.3.3 in its entirety and replace with the following:

14.3.3 In case of such termination for the Owner's convenience the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination along with reasonable overhead.

Add the following Articles and Paragraphs:

3.17 ARTICLE 15 - PREFERENCE FOR DELAWARE LABOR (NEW ARTICLE)

A. 15.1 The Contractor shall comply with the following provisions of Delaware Code, Title 29, Chapter 69, Section 6910:

In the construction of all public works for the State or any political subdivision or by persons contracting with the State or any political subdivision thereof, preference in employment of laborers, workmen or mechanics, shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State. Each public works contract for the construction of public works for the State or any political subdivision thereof shall contain a stipulation that any person, company, or corporation who violates this section shall pay a penalty to the Secretary of Finance equal to the amount of compensation paid to any person in violation of this section.

3.18 ARTICLE 16 - LICENSE AND TAX REQUIREMENTS (NEW ARTICLE)

A. 16.1 Contractor and subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. Contractor's shall submit a copy of all business licenses required by local and state agencies. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, the Contractor shall furnish the State Tax Department, within 10 days after award of contract, a statement of the total values of each contract and subcontract,

together with the names and addresses of the contracting parties. The Contractor, before the payment of any award or amount payable to any Contractor or subcontractor not a resident of Delaware, shall ascertain from said non-resident Contractor or subcontractor and/or the State Tax Department, whether he has obtained a license and satisfied his liability paid by the non-resident Contractor or subcontractor, the Contractor shall deduct from the award the amount payable to said non-resident contractor or subcontractor the amount of said license liability and shall pay same to the State Tax Department within 10 days after final payment and settlement with the non-resident Contractor or subcontractor.

- B. 16.2 Taxes: The Contractor shall pay all sales, consumer, use and other taxes required by law.

3.19 ARTICLE 17 - PREVAILING DELAWARE WAGE RATES (NEW ARTICLE)

- A. 17.1 In accordance with Delaware Code, Title 29, Chapter 69, Section 6960, all laborers and mechanics of the Contractor and all subcontractors employed to perform work directly upon the site of the work shall be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account the full amounts accrued at the time of payment computed at wage rates not less than those determined by the Division of Industrial Affairs, Department of Labor, State of Delaware, as the prevailing rates in this area.
- B. 17.2 This approved scale of wages must be posted by the Contractor in a prominent and easily accessible place at the site of the work.
- C. 17.3 It is further stipulated that there may be withheld from the Contractor such accrued payment as may be considered necessary by the contracting officer to pay laborers and mechanics employed by the Contractor or any subcontractors on the work the difference between the rates of wages required and the rate of wages received by such laborers and mechanics and not refunded to the Contractor, Subcontractor or their agents.
- D. 17.4 Where wage rates are published in this Manual they are issued by the State Department of Labor on the date indicated and are included for the convenience of Bidders. The Owner, the Architect, and the Construction Manager, accept no responsibility for the accuracy or applicability of any rates included herein. The actual wage rate determinations which

will apply to the work will be those in effect on the first day of public advertisement for bids as determined by the State Department of Labor. It will be the responsibility of each bidder to contact the State Department of Labor and to incorporate these rates in his bid.

- E. 17.5 "In accordance with Delaware Code, Title 29, Section 6960 as amended January 24, 2008, contractors shall furnish sworn payroll information to the Department of Labor on a weekly basis for each contract which exceeds \$15,000 for renovation work and \$100,000 for new construction. The construction contract amount is based on a cumulative total of all contracts bid for a specific project. Payroll forms for submission may be obtained from the Department of Labor."

17.5.1 A Payroll Report, available from the Department of Labor is to be used to provide this information.

END OF SECTION

SECTION 007343 – WAGE RATE REQUIREMENTS

1. SUMMARY

- 1.1. In accordance with Delaware Code, Title 29, Chapter 69, Section 6912, all laborers and mechanics of the Contractor and all subcontractors employed to perform work directly upon the site of the work shall be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account the full amounts accrued at the time of payment computed at wage rates not less than those determined by the Division of Industrial Affairs, Department of Labor, State of Delaware, as the prevailing rates in this area.
- 1.2 This approved scale of wages must be posted by the Contractor in a prominent and easily accessible place at the site of the work.
- 1.3 It is further stipulated that there may be withheld from the Contractor such accrued payment as may be considered necessary by the contracting officer to pay laborers and mechanics employed by the Contractor or any subcontractors on the work the difference between the rates of wages required and the rate of wages received by such laborers and mechanics and not refunded to the Contractor, subcontractor or their agents.
- 1.4 Where wage rates are published in this Manual they are issued by the State Department of Labor on the date indicated and are included for the convenience of Bidders. The Owner, the Architect, and the Construction Manager, accept no responsibility for the accuracy or applicability of any rates included herein. The actual wage rate determinations which will apply to the work will be those in effect on the first day of public advertisement for bids as determined by the State Department of Labor. It will be the responsibility of each bidder to contact the State Department of Labor and to incorporate these rates in his bid.
- 1.5 "In accordance with Delaware Code, Title 29, Section 6912, as amended July 5, 1994, contractors shall furnish sworn payroll information to the Department of Labor on a weekly basis for each contract which exceeds \$15,000 for renovation work and \$100,000 for new construction. The construction contract amount is based on a cumulative total of all contracts bid for a specific project. Payroll forms for submission may be obtained from the Department of Labor."
 - 1.5.1 A Payroll Report, available from the Department of Labor is to be used to provide this information.
- 1.6 A copy of the Prevailing Wages for the project is attached hereto.

END OF SECTION

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 451-3423

Mailing Address:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

Located at:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

PREVAILING WAGES FOR BUILDING CONSTRUCTION EFFECTIVE MARCH 15, 2013

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	21.87	26.94	39.20
BOILERMAKERS	65.47	33.22	48.83
BRICKLAYERS	46.83	46.83	46.83
CARPENTERS	50.06	50.06	39.82
CEMENT FINISHERS	27.61	29.11	21.20
ELECTRICAL LINE WORKERS	43.49	37.29	28.44
ELECTRICIANS	60.60	60.60	60.60
ELEVATOR CONSTRUCTORS	75.33	40.93	30.55
GLAZIERS	64.10	64.10	54.20
INSULATORS	51.48	51.48	51.48
IRON WORKERS	59.12	59.12	59.12
LABORERS	38.30	38.30	38.30
MILLWRIGHTS	62.18	62.18	48.75
PAINTERS	42.02	42.02	42.02
PILEDRIVERS	67.87	37.64	30.45
PLASTERERS	28.55	28.55	17.50
PLUMBERS/PIPEFITTERS/STEAMFITTERS	59.00	49.26	46.28
POWER EQUIPMENT OPERATORS	57.06	57.06	24.13
ROOFERS-COMPOSITION	21.77	17.96	19.34
ROOFERS-SHINGLE/SLATE/TILE	17.59	17.50	16.45
SHEET METAL WORKERS	62.74	62.74	62.74
SOFT FLOOR LAYERS	45.97	45.97	45.97
SPRINKLER FITTERS	51.75	51.75	51.75
TERRAZZO/MARBLE/TILE FNRS	51.41	51.41	45.45
TERRAZZO/MARBLE/TILE STRS	59.03	59.03	52.63
TRUCK DRIVERS	26.58	23.89	20.03

CERTIFIED: _____

BY: _____
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE (302) 451-3423.

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

THESE RATES ARE BEING PROVIDED IN ACCORDANCE WITH DELAWARE'S FREEDOM OF INFORMATION ACT.

THEY ARE NOT INTENDED TO APPLY TO ANY SPECIFIC PROJECT.

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SECTION 10 11 00 - SUMMARY OF WORK

1. RELATED DOCUMENTS

1.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to work of this Section.

2. CONTRACTS

2.1 The work will be performed under separate prime contracts managed by the Construction Manager.

3. ALTERATIONS & COORDINATION

3.1 Contractor shall be responsible to coordinate their work with the work of others, including, but not limited to, the preparation of general coordination drawings, diagrams and schedules, and control of site utilization, from the beginning of activity, through project close-out and warranty periods.

4. KNOWLEDGE OF CONTRACT REQUIREMENTS

4.1 The Contractor and his Subcontractors, Sub-subcontractors and material men shall consult in detail the Contract Documents for instructions and requirements pertaining to the Work, and at his and their cost, shall provide all labor, materials, equipment and services necessary to furnish, install and complete the work in strict conformance with all provisions thereof.

4.2 The Contractor will be held to have examined the site of the Work prior to submitting his proposal and informed himself, his Subcontractors, Sub-subcontractors and material men of all existing conditions affecting the execution of the Work.

4.3 The Contractor will be held to have examined the Contract Documents and modifications thereto, as they may affect subdivisions of the Work and informed himself, his Subcontractors, Sub-subcontractors and material men of all conditions thereof affecting the execution of the Work.

4.4 The Scope of Work for the Contract is not necessarily limited to the description of each section of the Specifications and the illustrations shown on the Drawings. Include all minor items not expressly indicated in the Contract Documents, or as might be found necessary as a result of field conditions, in order to complete the Work as it is intended, without any gaps between the various subdivisions of work.

4.5 The Contractor will be held to be thoroughly familiar with all conditions affecting labor in the area of the Project including, but not limited to, Unions, incentive pay, procurements, living, parking and commuting conditions and to have informed his Subcontractors and

Sub-subcontractors thereof.

5. CONTRACT DOCUMENTS INFORMATION

- 5.1 The Contract Documents are prepared in accordance with available information as to existing conditions and locations. If, during construction, conditions are revealed at variance with the Contract Documents, notify the Construction Manager immediately, but no more than three (3) days from the day the variance is first known. Failure to give timely notice shall operate to waive any claim Contractor might otherwise have for an adjustment to Contract Time or Sum as a consequence of such variance.
- 5.2 The Specifications determine the kinds and methods of installation of the various materials, the Drawings establish the quantities, dimensions and details of materials, the schedules on the Drawings give the location, type and extent of the materials.
- 5.3 Dimensions given on the Drawings govern scale measurements and large scale drawings govern small scale drawings, except as to anything omitted unless such omission is expressly noted on the large scale drawings.
- 5.4 The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic/descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The methods used for specifying one unit of work has no bearing on requirements for another unit of work.
- 5.5 Whenever a material, article or piece of equipment is referred to in the singular number in the Contract Documents, it shall be the same as referring to it in the plural. As many such materials, articles or pieces of equipment shall be provided as are required to complete the Work.
- 5.6 Whenever a material, article or piece of equipment is specified by reference to a governmental, trade association of similar standard, it shall comply with the requirements of the latest publication thereof and amendments thereto in effect on the bid date.
- 5.7 In addition to the requirements of the Contract Documents, Contractor's work shall also comply with applicable standards of the construction industry and those industry standards are made a part of Contract Documents by reference, as if copied directly into Contract Documents, or as if published copies were bound herein.
- 5.8 Where compliance with two (2) or more industry standards, contract requirements, or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, then the most stringent requirements, which are generally recognized to be also the most costly, is intended and will be enforced, unless specifically detailed language written into the Contract Documents clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently equal but different requirements, and uncertainties as to which level of quality

is more stringent, to Architect for decision before proceeding.

- 5.9 Reference standards referenced directly in Contract Documents or by governing regulations have precedence over non-reference standards which are recognized in industry for applicability of work.
- 5.10 Contractor's bid is based on the complete set of Contract Documents including documents not specifically issued as part of the bid pack but referenced in same.

6. SCOPE OF WORK/GENERAL INFORMATION

- 6.1 A Scope of Work for each contract to be awarded on the project follows in this section. When a Contract has been awarded to a Contractor, the successful Contractor will be listed after the title of the Contract. When no Contract has yet been awarded, no Contractor's name will be listed. Previous Scopes of Work include addendum changes.
- 6.2 Contractor is responsible for performing the work listed in the Summary of Work for his contract. Contractor is also responsible for knowing the work that has been assigned to preceding contracts. No additional compensation or extension of time will be allowed a Contractor due to his ignorance of the work assigned to his Contract or to other contracts which may affect his work. The Contractor is responsible, however, for all items which are covered in the Specifications and Drawings relating to their Contract if not specifically mentioned in the Summary of Work.
- 6.3 The Construction Manager will provide on site a source for temporary electric, temporary water and portable sanitation facilities only. It is each Contractor's responsibility to make the necessary connections, including all material for temporary electric and water. Please note that utility charges for office trailers will be the responsibility of the individual Contractors. As well as local permits required for trailers.
- 6.4 A dumpster will be provided on site for free use by Contractors to dispose of non-hazardous, common, work-related refuse. Clean-up is the responsibility of each Contractor. Clean up shall be performed on a daily basis. Contractors not complying will be advised in writing and back charged for all costs associated with the clean up of their work.
- 6.5 Contractors are reminded that there are limited storage areas available on site. Off site storage will be the responsibility of each individual Contractor.
- 6.6 Office trailer permits off site will be the responsibility of each individual Contractor. On site Contractor's field offices, one (1) per Contractor, if required, will be located as directed by the Construction Manager.
- 6.7 Contractor will be prepared to discuss and submit a detailed project schedule seven (7) days after receipt of Notice to Proceed and to begin its submittal process. The Project

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Schedule is an integral part of this contract. Certain construction sequences and priorities must take place in order to meet the target dates. Concentrated work periods will occur and each Contractor is responsible to staff the project as required by the current Construction Schedule or as directed by the Construction Manager. Contractor will cooperate with the Construction Manager in planning and meeting the required sequences of work and Project Schedule as periodically updated by the Construction Manager.

- 6.8 All bids must include insurance limits in accordance with Article 11 of the Section 00 73 00 SUPPLEMENTARY CONDITIONS.
- 6.9 Hoisting, scaffolding and material handling is the responsibility of each Contractor, unless otherwise noted.
- 6.10 Contractor will be responsible for layout of its own work. The Construction Manager will provide benchmark and layout of the building line.
- 6.11 Contractor will be responsible to keep clean public roadways soiled by construction traffic on a daily basis. If cleaning is not done, the Construction Manager may perform the cleaning on an overtime basis and backcharge the Contractor responsible.
- 6.12 Contractor Scopes of Work and Schedule are interrelated. Familiarity with each is required.
- 6.13 The Construction Manager will provide testing services for soil, concrete and steel. Other testing as required by the Contract Documents will be in accordance with the technical specifications and/or the individual scope of work. Refer to Specification Section 01 45 00 - QUALITY CONTROL.
- 6.14 Safety is the responsibility of each individual Contractor. The project will be governed under the guidelines of OSHA.
- 6.15 Inter-Contractor shop drawing distribution will be performed by the Construction Manager. Contractor is individually responsible for either coordinating his work with these distributed drawings or notifying the Construction Manager, in writing, of any discrepancies.
- 6.16 Coordination with other trades will be required. The Contractor will be required to attend periodic coordination meetings with other trades where requirements, conflicts and coordination issues will be discussed and resolved. Attendance when requested will be mandatory. If inter-Contractor coordination is not satisfactorily performed, the conflicting Contractors shall mutually share the cost to relocate and/or reinstall their work.
- 6.17 Contractor shall submit a schedule of values to the Construction Manager through the

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Building Blok Management Program prior to the submission of their first invoice for approval on AIA G702/CMA, Application for Payment and G703, Continuation Sheet.

- 6.18 Contractor is expected to review and coordinate its Work with the complete set of Contract Documents, including all items noted as by his trade whether or not shown on that particular set of drawings. Documents are available at the site for review.
- 6.19 Contractor is responsible for obtaining all necessary permits required for his work, including street permits. Unless otherwise noted, building permit shall be secured by the Construction Manager. Any subcontractor who will be restricting access to street, right of way or adjacent property must notify the Construction Manager 48 hours in advance.
- The documents require the Subcontractor to secure their own permits. In some jurisdictions (Middletown, Newark, etc.) the permit (Mechanical, HVAC, etc.) is included in the Building Permit and you must specifically advise Subcontractor of the assessment and amount in order to avoid having them not be responsible.
- 6.20 Contractor's License: Submit a copy of all business licenses required by local and state agencies.
- 6.21 Contractor shall absorb, without additional compensation, any and all costs of working beyond normal hours to maintain job progress in accordance with the current construction schedule.
- 6.22 No asbestos or PCB's in or on any material or equipment will be accepted or allowed on this project. All hazardous materials will be treated in accordance with all State and Federal regulations.
- 6.23 Daily clean up of the work is the responsibility of each individual Contractor which includes broom cleaning of their debris as required. Contractor will be individually back charged by the Construction Manager for clean up not satisfactorily performed by the Contractor.
- 6.24 In the event asbestos is uncovered, the Contractor shall notify the Construction Manager of the areas requiring removal of asbestos. The Construction Manager shall then coordinate the removal with the Owner.
- 6.25 This project is to be constructed adjacent to and in existing buildings. Contractor shall exercise all due precautions to minimize noise, air pollution and any other construction hazards which in any way would cause discomfort or danger to the occupants of the existing building in the area.
- 6.26 Existing mechanical, electrical, plumbing, sprinkler, medical gas, fire alarm, etc. systems will be shut off and locked out by the Owner as required by the Work. Tie-in's and modifications to those systems will be performed by the specific Contractor associated

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with the work as indicated in the Contract Documents. Re-energizing and re-start up of all systems should be performed by the Owner.

- 6.27 The Safety Cable System shall not be altered or removed without a written request submitted to the Project Manager with a copy to the Field Manager. It shall be the responsibility of each and every Contractor that is removing or altering the Safety Cable System to maintain the fall protection safety provided by the safety cable and not leave the area unprotected. Each and every Contractor shall be responsible to re-install the Safety Cable System immediately after work is completed. Each and every Contractor shall be responsible to re-install the Safety Cable System in accordance to OSHA standards.
- 6.28 Normal work hours for this project are from 7:00 a.m. to 3:30 p.m. Any work to be performed outside of these hours must receive prior approval from the Construction Manager. Requests to work beyond normal work hours shall be submitted at least 48 hours prior.
- 6.29 Contractor is responsible for having a competent project superintendent/foreman on-site during all work performed under its contract.
- 6.30 In the event the Contractor has non-English speaking employees or subcontractors on the project, they shall have a superintendent or foreman on site, at all times, who speaks English and can communicate with Contractor's employees. Should the Contractor fail to meet this requirement, at any time, Construction Manager may direct all Work to stop until the proper supervision is on site. The Contractor will be responsible for maintaining the project work schedule and make up at its own expense, any delay to the Schedule resulting from the work stoppage.
- 6.31 Punch List Procedures: Contractor shall be given a copy of the punch list with his appropriate work identified. Contractor shall have nine (9) calendar work days to complete its punch list work. On the 10th day or as determined by the Construction Manager, the Construction Manager shall employ other contractors, as required, to complete any incomplete punch list work and retain from the appropriate Contractors retainage all costs incurred.
- 6.32 Contractor shall provide the necessary safety barricades and railings required to complete their work and comply with all OSHA, local code and contract specifications.

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CONTRACT NO. NDHS-41: TELECOMMUNICATIONS

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Section 270500	Telecommunications Pathways and Spaces
Section 27100	Structural Cabling for Telecommunications
Section 27200	Network Equipment (NIC Bid Package H2)
Section 27300	Telephone Equipment (NIC Bid Package H2)
Section 27400	IP Video Distribution (NIC Bid Package H2)

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

- Telecommunications wiring and equipment system complete.
- Include a \$10,000 allowance for work to be determined by the Construction Manager.

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CONTRACT NO. NDHS-42: AUDIO, VIDEO AND SOUND SYSTEM

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Section 270500	Telecommunications Pathways and Spaces (For Reference)
Section 27100	Structural Cabling for Telecommunications (For Reference)
Section 27200	Network Equipment (NIC Bid Package H2)
Section 27300	Telephone Equipment (NIC Bid Package H2)
Section 27400	IP Video Distribution (NIC Bid Package H2)
Section 27410	Audio, Video and Sound Systems

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

- Audio, Video and Sound System complete.
- Include a \$10,000 allowance for work to be determined by the Construction Manager.

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CONTRACT NO. NDHS-43: INTERCOM, CLOCKS, INTRUSIONS/ACCESS, VIDEO SURVEILLANCE

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Section 270500	Telecommunications Pathways and Spaces (For Reference)
Section 27100	Structural Cabling for Telecommunications (For Reference)
Section 27200	Network Equipment (NIC Bid Package H2)
Section 27300	Telephone Equipment (NIC Bid Package H2)
Section 27400	IP Video Distribution (NIC Bid Package H2)
Section 27500	Intercom and Master Lock
Section 28100	Access Control & Intrusion Detection
Section 28200	Video Surveillance

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

- Access controls and intrusion system.
- CCTV/Video surveillance system.
- Intercom and master clock system.
- Include a \$10,000 allowance for work to be determined by the Construction Manager.

END OF SECTION

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SECTION 01 21 00 - ALLOWANCES

1. RELATED DOCUMENTS

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in AIA General Conditions A201/CMa – 1992 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION WHERE THE CONSTRUCTION MANAGER IS NOT A CONSTRUCTOR, for requirements in addition to those specified in Division 1.
- 1.3 Refer to Scope Information Sheets for all contracts bound in the Project Manual under Section 01 11 00 - SUMMARY OF WORK. The Scope Information Sheets describe generally the work included in each contract, but the work is not necessarily limited to that described.
- 1.4 For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.
- 1.5 Include in the Contract Sum all lump sum and unit cost allowances stated in the Contract Documents.
- 1.6 Designate in the construction progress schedule the delivery dates for products specified under each allowance.
- 1.7 Designate in the Schedule of Values the quantities of materials required under each unit cost allowance.

2. ALLOWANCES FOR PRODUCTS

- 2.1 The amount of each allowance includes:
 - A. The cost of the product or labor to the Contractor or Subcontractor, less any applicable trade discounts.
 - B. Delivery to the site.
 - C. Labor required under the allowance, only when labor is specified to be included in the allowance. If labor is not specified to be included in the allowance, it shall be included in the Contractor's bid and in the resulting Contract Sum.
 - D. Applicable taxes.

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- E. Profit and overhead.
- 2.2 In addition to the amount of each allowance, include in the Contract Sum the Contractor's costs for:
- A. Handling at the site; including unloading, uncrating and storage.
 - B. Protection from the elements and from damage.
 - C. Labor for installation and finishing, except where labor is specified to be a part of the allowance.
 - D. Other expenses required to complete the installation.
 - E. Contractor's and Subcontractor's overhead and profit.
- 2.3 Refer to Scope Information Sheets under Section 01 11 00 - SUMMARY OF WORK for the amount of each lump sum allowance and for work specified in the specification sections listed below.
- A. Section 02072: Provide labor under direction of CM.
3. ADJUSTMENT OF COSTS
- 3.1 Should the net cost be more or less than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order.
- A. For products and labor specified under a unit cost allowance, the unit cost shall apply to the quantities actually used with a nominal allowance for waste, as determined by receipted invoices, or by field measurement.
- 3.2 At Contract closeout, reflect all approved changes in Contract amounts in the final statement of accounting.

END OF SECTION

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SECTION 01 22 00 - UNIT PRICES

1. GENERAL PROVISIONS

- 1.1 The general provision of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in AIA Document A201/CMA - 1992 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION WHERE THE CONSTRUCTION MANAGER IS NOT A CONSTRUCTOR, for requirements in addition to those specified in Division 1.
- 1.3 For work being constructed under separate prime contract, provisions of this Section apply to each contract being bid.

2. BASE BID

- 2.1 The Base Bid shall consist of all work shown or specified in the Contract Documents, exclusive of any Additive Unit Prices specified herein.
- 2.2 The Base Bid shall include all work in any Subtractive Unit Prices specified herein.

3. UNIT PRICES

- 3.1 State in the Bid Form the amount to be added to (or subtracted from) the Base Bid per unit of measurement for each Unit Price specified. State this amount to include all overhead and profit. No surcharge in addition to the Unit Price listed will be permitted.
- 3.2 See Section 00 21 13, INSTRUCTIONS TO BIDDERS for related information.
- 3.3 For description of Unit Prices requested, refer to the specification. The method of stating the Unit Prices is described in the Bid Form.
- 3.4 Where both add and deduct unit prices are requested, there shall not be more than a 10% variation between the two.

4. APPLICATION OF UNIT PRICES

- 4.1 Unit prices stated in the Bid Form will apply from the time the Bid is submitted until Contract completion.

5. MEASUREMENT OF QUANTITIES

- 5.1 Quantities shall be determined by field measurement by contractor personnel and as

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verified by the Construction Manager.

5.2 At the Contractor's option, and at his expense, measurement may be made by a registered surveyor.

6. LIST AND DESCRIPTION OF UNIT PRICES

N/A

END OF SECTION

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SECTION 01 23 00 - ALTERNATES

1. GENERAL PROVISIONS

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in AIA Document A201/CMa - 1992 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION WHERE THE CONSTRUCTION MANAGER IS NOT A CONSTRUCTOR for requirements in addition to those specified in Division 1.
- 1.3 For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.

2. BASE BID

- 2.1 The Base Bid shall consist of all work shown or specified in the Contract Documents, exclusive of any Additive Alternates specified herein.
- 2.2 The Base Bid shall include all work in any Subtractive Alternates specified herein.

3. ALTERNATES

- 3.1 State in the Bid Form the amount to be added to the Base Bid for each Alternate specified.
- 3.2 See Section 002113 - INSTRUCTIONS TO BIDDERS for related information.
- 3.3 The description of Alternates contained herein is in summary form. Detailed requirements for materials and execution shall be as specified in other sections and as shown on drawings.

Alternate BPH-1-39: At Main Gymnasium provide projector and projection screen as indicated on sheet T-125.

Alternate BPH-1-40: At Cafeteria, in lieu of (1) LED screen labeled BASE BID, provide pole mounted ceiling projector as indicated on sheet T-114.

END OF SECTION

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SECTION 012600 - CHANGE ORDER PROCEDURES

1. GENERAL:

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in AIA Document A232 – 2009 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- 1.3 The Construction Manager is responsible for processing all change orders. Each request will be assigned a change order request (COR) number. The Change Order Request & Execution Form will be initiated via the web-based project management system (Building Blok) used by the CM.
- 1.4 It is to be clearly understood that no extra work shall commence without an approved written and executed change order from the Owner.

2. INITIATING A CHANGE ORDER:

- 2.1 Specific changes initiated by the Owner, Architect, Construction Manager (CM) or Contractor will be processed as follows:
 - A. The Owner will authorize the Architect to prepare sufficient documents to establish an accurate price. These documents to be forwarded to the Construction Manager and Owner “for pricing only, not authorized for construction.” The Construction Manager will develop the estimate (within 2 weeks) showing a breakdown by trades with all trade contractor quotes. The Owner will approve or reject the change request within two (2) weeks. If the Owner elects to proceed with the change, the Construction Manager will prepare formal change orders to the various trade contractors involved in the change and reference in all formal change orders the original change order request number.
 - B. Field Change: Contractor shall immediately notify the Construction Manager of a change due to field conditions or site conditions. If documents cannot be prepared for pricing due to schedule constraints, the Construction Manager will make every effort in estimating the field change. If the Owner and Construction Manager agree that certain field changes should be handled on a time and material basis, the Construction Manager will closely monitor the Contractor's labor and material affecting this change. At the completion of the work a formal change order will be issued.
 - C. Contractor Change: If a Contractor initiates a change order for work not included in the Contract, the Construction Manager and Architect will research the validity of the request, verify quantities and pricing and submit to the Owner for approval on a

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change order request.

- 2.2 The additional cost, or credit to the Owner resulting from a change in the Work shall be by mutual agreement of the Owner, Contractor, Construction Manager and the Architect.
3. PROCESSING A CHANGE ORDER:
- 3.1 The Contractor will fill in the Change Order Request & Execution Form (COREF) with a brief description of the change, any time extension, and cost changes.
- 3.2 The Contractor will attach to the COREF copies of the written quotations from the trade contractors, Contractors, and suppliers. The Labor Detail Sheet and the Change Order Detail forms must be added as an attachment to the COREF. The Contractor and each sub-tier contractor (as applicable) must fill out the Labor Detail Sheet and Change Order Detail Sheet. Samples of these forms are attached.
- 3.3 In all cases, this cost or credit shall be based on the "DPE" wages required and the "invoice price" of the materials/equipment needed.
- 3.4 "DPE" shall be defined to mean "direct personnel expense". Direct payroll expense includes direct salary plus customary fringe benefits (prevailing wage rates) and documented statutory costs such as workman's compensation insurance, FICA, and unemployment insurance.
- A. "Fringe Benefit" is any medical, life or disability insurance, paid time off, etc.
 - B. "Worker's Compensation" is the insurance required for injuries including medical leave, etc.
 - C. "FICA" is the costs association with Social Security and Medicare insurance.
 - D. "Unemployment insurance" is the cost associated with the governmental assessment for employee's unemployment benefits.
- 3.5 "Invoice price" of materials/equipment shall be defined to mean the actual cost of materials and/or equipment that is paid by the Contractor (or Subcontractor) to a material distributor, direct factory vendor, store, material provider, or equipment leasing entity.
- 3.6 In addition to the above, the Contractor is allowed markup for overhead and profit on additional work performed as outlined in Specification Section 012613, Contractor Compensation.
- 3.7 Building Blok Procedures: The Contractor will submit all change order requests and supporting documentation via the Building Blok web-based project management system. Each Contractor will be issued a unique login and password. Each contractor must
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submit the information as follows:

- A. Create a new change order, from your "To-Do List" by clicking on the "Create Issue" tab in the upper right corner and select "Change Order Request".
- B. The Contractor will enter a brief description of the change in the "Summary" block. A detailed description of the change will be entered in the "Description of Change" block, to include any changes to documents or time extension. The cost of the change will be entered in the "Total Cost Change" block.
- C. The Labor Detail Sheet and the Change Order Detail forms must be added as an attachment to the request. The Contractor and each sub-tier contractor (as applicable) must fill out the Labor Detail Sheet and Change Order Detail Sheet. Samples of these forms are included behind this section. In addition to these forms, the Contractor also must attach any material and equipment rental quotations. All of these documents should be scanned and saved as a PDF file. Click on the "Browse" box to upload the file. Be sure to wait until Building Blok tells you the file was "Uploaded Successfully".
- D. Once the information is entered on the form and the proper attachments are uploaded, the contractor will click "Save". The Contractor will be prompted to enter their password to approve an electronic signature. Once you save the request you will have an opportunity to check it before submitting it to the CM. After you verify the COREF is correct click "Recommend Approval" to submit the change request to the CM. The Contractor will then be prompted to re-enter the password to approve an electronic signature and complete the submission request. Click on "Home" in the upper left corner to make sure the change order does not appear on your To-Do List.
- E. The Change Order Request will then be reviewed by the CM Project Manager and Recommended for Approval, Rejected, or returned to the Contractor for additional information. Once the Construction Manager, Owner, and Architect have approved the request all parties will receive an email from Building Blok notifying them that a fully executed Change Order and Contract Recalculation Form can be downloaded from Building Blok. Hard copies of the executed change order and recalculation form will not be provided by the CM.

It is to be clearly stated that no extra work shall commence without an approval from the **Owner or Construction Manager** or Owner's representative.

END OF SECTION

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CHANGE ORDER REQUEST & EXECUTION FORM

110 South Poplar Street
Suite 400
Wilmington, DE 19801

Tel. 302-421-5700
Fax 302-421-5715

DATE:

PROJECT NAME:

CONTRACT:

REQUEST NUMBER:

CONTRACTOR:

CHANGE ORDER NUMBER:

STATE PO NUMBER:

The following is a summary of the request submitted by the contractor as described above. All supporting documents have been attached and described herewith. This summary shall contain a total amount of compensation requested by the contractor as well as any request for an extension in contract time. It shall be understood that the amounts described below shall remain valid for a period of sixty days from the date described above unless otherwise stated.

A detailed breakdown of Labor, material, equipment, and subcontract costs must be attached to be considered for review.

1. Summary Description(s):
2. Changes to the Contract Drawings:
3. Changes to the Project Manual:
4. Total Cost Change:
5. Total Time Change:

REVIEWED	
This request has been reviewed and ___approval___disapproval is recommended by:	
Name	Title
Date	
APPROVED	
This change order request is not approved until executed by all parties bound by a contractual relationship. Upon execution it shall represent a modification to the agreement and is subject to all terms and conditions of the contract documents.	
Contractor: _____ Signed By: _____ Title: _____ Date: _____	Architect: _____ Signed By: _____ Title: _____ Date: _____
EDiS Company Signed By: _____ Title: _____ Date: _____	Owner: _____ Signed By: _____ Title: _____ Date: _____



CHANGE ORDER DETAIL FORM
 (Provided by contractor, subcontractor or sub tier contractor)

DATE SUBMITTED:

CONTRACT:

CONTRACTOR:

PROJECT NAME:

CHANGE ORDER REQUEST #:

LABOR SECTION			
TRADESMAN(s):	LABOR HOURS	RATE (per schedule)	SUBTOTAL
Subtotal			

MATERIAL SECTION			
MATERIAL:	QUANTITY	UNIT COST	SUBTOTAL
Subtotal			

EQUIPMENT SECTION			
EQUIPMENT:	QUANTITY	UNIT COST	SUBTOTAL
Subtotal			

SUBTOTAL	
SUBCONTRACTOR/ SUB TIER*	
OH & PROFIT (10% on sub/sub tier only)	
BOND COST	
OH & PROFIT (15% on own work)	
GRAND TOTAL	

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SECTION 01 26 13 - CONTRACTOR COMPENSATION

1. GENERAL

1.1 The Contractor agrees to perform any additional Work, for the net cost of materials and labor (including wages paid, payroll taxes, and all insurance) plus the following percentage for all of his overhead and profit, which includes Field Supervision:

The percentages to be added or allowed for any Work change involving both added Work and omitted Work shall be applied only to the net difference in cost.

- (a) 15% mark-up (10% overhead and 5% profit) by the Contractor on Work performed by his own forces.
 - (b) For work done by a Subcontractor, 10% for subcontractor overhead and 5% for subcontractor profit to which the Contractor may add 7.5% for his overhead and profit combined.
 - (c) Contractor mark-up shall include supervision, home and field overhead, all self-owned small tools and equipment.
- 1.2 When the Contractor is directed to perform overtime work at the CM (Owner) expense to accelerate contractual work, the cost for same shall only be the actual premium costs incurred by the Contractor.

END OF SECTION

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SECTION 01 29 00 - PAYMENT PROCEDURES

1. GENERAL PROVISIONS

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in either AIA Document A201/CMA - 1992 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION WHERE THE CONSTRUCTION MANAGER IS NOT A CONSTRUCTOR for requirements in addition to those specified in Division 1.
- 1.3 For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.

2. REQUIREMENTS INCLUDED

- 2.1 Submit Applications for Payment to Construction Manager in accordance with the schedule and procedures established in the Contract Documents.

3. RELATED REQUIREMENTS

- 3.1 Owner-Contractor Agreement.
- 3.2 Conditions of the Contract: Article 9 PAYMENTS AND COMPLETION.
- 3.3 Section 01 31 13: Project Meetings
- 3.4 Section 01 33 00: Submittals
- 3.5 Section 01 77 00: Contract Closeout

4. FORMAT AND DATA REQUIRED

- 4.1 Submit Schedule of Values and itemized applications through the Building Blok System.
- 4.2 Provide itemized data on Continuation Sheet:
 1. Format, schedules, line items and values: Duplicates of those of the schedule of values previously accepted by the Construction Manager.

5. PREPARATION OF APPLICATIONS FOR PROGRESS PAYMENTS

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5.1 Schedule of Values and Applications for Payment to be processed through the Building Blok Management Program.

6. PREPARATION OF APPLICATION FOR FINAL PAYMENT

6.1 Fill in Application form as specified in progress payments.

7. SUBMITTAL PROCEDURES

7.1 Complete Invoice:

1. Submit completed Application to the Construction Manager by the 25th of each month.

7.2 To be submitted through the Building Blok Management Program.

END OF SECTION

SECTION 01 31 13 - PROJECT COORDINATION MEETING

1. PROJECT COORDINATION MEETING

1.1 An on-site project coordination meeting will be held on a biweekly basis throughout the project construction period.

2. ATTENDANCE

2.1 Attendance at the project coordination meeting is mandatory of each Contractor or major supplier on the project.

2.2 The representative of the Contractor shall be the Project Manager and field superintendent, unless a substitute representative has been approved by the Construction Manager.

2.3 Contractor will begin attending the Project Coordination Meetings at least 4 weeks prior to mobilization on site, and will continue until the Contractor has fulfilled the obligations of his Contract.

3. AGENDA

3.1 The Construction Manager will set the agenda for the biweekly Project Coordination Meeting.

3.2 At a minimum, the Contractor shall be prepared to discuss the following:

1. Actual vs. as planned progress for the prior two week period.
2. Planned construction activities for the next four weeks.
3. Contract document clarifications.
4. Coordination items with other contractors.
5. Quality Control.
6. Recently issued change orders.
7. Potential change orders.
8. Submittals and shop drawings.
9. Other items requiring Construction Manager's attention.

END OF SECTION

SECTION 01 31 16 - BIM MODELING COORDINATION DRAWING GUIDELINES

1. GENERAL

- 1.1 All Sheetmetal, Mechanical Piping, Plumbing, Fire Protection (FP), Electrical and ATC Subcontractors will be required to prepare 3D coordination drawing using the latest AutoCAD and Navisworks Clash Detective programs. Coordination drawings will be distributed via email and/or disk. The mechanical piping and plumbing work may be awarded to the same subcontractor so some steps such as emailing amongst themselves may not apply; the procedures contained herein will generally be the same. All costs shall be included in the contractors bid.

NOTE: The coordination drawings will be administered through the Building Blok Project Manager system. See Section 01 12 50 Web Based Project Manager System for Construction.

- 1.2 Contract architectural, MEP and structural drawings (3D) will be available electronically from the designated FTP site.
- 1.3 All ductwork, piping and electrical systems shall be thoroughly dimensioned as to location and height above finished floor. Each different system will be drawn in a different color. Yellow shall not be used. Text shall be uniform in size across all trades. Object blocks (i.e. sprinkler heads) shall be indicated close to their actual size. Piping 2" and larger shall be indicated as a double line. Insulation thickness of pipes and duct shall be indicated.
- 1.4 The Sheetmetal Subcontractor will take the lead and develop a drawing list for approval by the Construction Manager subdividing the buildings into separate areas of zones. The drawing list will be for submission and will indicate a submission schedule coordinated with the construction activities. The drawings shall be developed in a sequential fashion so as to not delay installation of the work or the overall project schedule. The Sheetmetal Subcontractor shall include a master key plan so that the area of each drawing can be readily identified as to the location within each building. The Construction Manager shall prepare a schedule identifying the activity and duration of each submission.
- 1.5 Following a coordination kick-off meeting, a list of each subcontractor, their coordination contact person, phone number and email addresses will be generated and distributed to all parties. As each drawing is completed, it is to be emailed to each party on the coordination list.
- 1.6 The Sheetmetal Subcontractor shall maintain a weekly status log on the Building Blok System. Each subcontractor is responsible to submit and coordinate his work with each trade.

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- 1.7 Preparation of coordination drawings shall commence at the issuance of a letter of intent. The coordination drawings may lack data in certain instances pending receipt of equipment drawings, but sufficient space shall be allotted for the items affected. When final information is received, such data shall be promptly inserted on the composite by that subcontractor.
- 1.8 Coordination drawings shall indicate clearances for servicing and accessing equipment, including space for equipment disassembly required for periodic maintenance.
- 1.9 Coordination is the responsibility of all MEP subcontractors; the Sheetmetal Contractor shall assign a project manager dedicated to oversee this process. The Sheetmetal Project Manager will call meetings, weekly, or as required, which subcontractors must attend to avoid delay. Failure to attend will require the subcontractor to field run the work not coordinated. No extra compensation will be paid to any subcontractor for relocating any equipment, duct, pipe, conduit or other material that has been installed without proper coordination. If the installation of any uncoordinated work or improper installation or coordinated work necessitates additional work by other Subcontractors, The cost of such additional work shall be assessed to the Subcontractor responsible as determined by the Construction Manager.
- 1.10 At the conclusion of each composite drawing(s) coordination process, the Sheetmetal Subcontractor will notify the Construction Manager whereupon an on-site coordination meeting will be scheduled for the purpose of signing off on each respective drawing(s). Each Subcontractor will not be authorized to release any material for fabrication or installation until the composite drawing(s) has been prepared and the signature process is executed and approved by the Construction Manager.
- 1.11 Coordination drawings of the underground and underslab piping by the plumbing Subcontractor and electrical work will be required. These drawings shall be prepared in 3D modeling software. The Plumbing Contractor shall proceed in the preparation of the coordinated underground plumbing drawings. The Plumbing Contractor shall add to the background drawings pertinent information such as footings, grade beams, column piers, etc. into the background. The Plumbing Contractor shall include location, invert, size and plumbing accessories, dimensioned to centerline of adjacent columns. At the completion of this work, the Plumbing Contractors will E-mail their work to the Electrical Contractor for incorporation of all below slab electrical conduit and electrical utilities. Upon completion of this work, the Plumbing Contractor shall prepare a coordinated underground composite plan for sign-off as described in Paragraph 1.22 below:
- 1.12 As soon as practical, the Sheetmetal Subcontractor will coordinate the background model of all architectural elements of the building indicating all walls, partitions,

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columns, concrete beams, structural steel with bottom of steel elevations, windows, doors, room numbers, ceiling heights, ceiling types, and ceiling layouts, floor elevations and other structural and architectural features. The Sheetmetal Subcontractor shall prepare but not limited to reflected ceiling plans showing the location of light fixtures (which shall include depths), speakers, smoke/heat detectors, fire alarm horn/strobes, sprinklers, grilles, registers, diffusers and any other components requiring coordination. In addition, the Sheetmetal Subcontractor shall inform the Project Manager of any changes in layouts or dimensions as may be issued during the coordination process through addendums, bulletins, RFIs etc. The Sheetmetal Subcontractor shall electronically forward these background drawings to all participants.

- 1.13 Once the layout drawings are prepared all subcontractors shall incorporate all equipment and panels into the model prior to the Sheetmetal Subcontractor proceeding with their own work. Thereafter the Sheetmetal Subcontractor will prepare layout drawings of all ductwork. These drawings will show all wall fire ratings, registers, grilles, diffusers and similar features as well as locations of all valves, dampers, damper operators and other items requiring access for maintenance. All dimensions should be from centerlines of columns and ductwork elevations shall be from finished floor slab.
- 1.14 The Sheetmetal Subcontractor upon completion of his work will electronically forward his data to the Mechanical Piping Subcontractor and copy all participants. The Mechanical Piping Subcontractor shall download the sheetmetal data and incorporate, by separate layer, their own piping routing, valves (including control valves) with valve tags, as well as other areas requiring access for service and maintenance to determine their relationship and possible interference with the mechanical, architectural or structural features to be performed as part of the work.
- 1.15 The Mechanical Piping Subcontractor upon completion of his work will electronically forward his data to the Plumbing Subcontractor and copy all participants. The Plumbing Subcontractor shall download the sheetmetal and piping data and incorporate, by separate layer, their own routing as well as other areas requiring access for service and maintenance to determine their relationship and possible interference with the mechanical, architectural or structural features to be performed as part of the work.
- 1.16 The Plumbing Piping Subcontractor upon completion of his work will electronically forward his data to the FP Subcontractor and copy all participants. The FP Subcontractor shall download the drawing and incorporate, by separate layer, their own routings as well as other areas requiring access for service and maintenance, to determine their relationship and possible interferences with the mechanical, electrical, plumbing and architectural or structural items to be installed as part of the overall work.

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- 1.17 The Fire Protection Subcontractor will then electronically forward his data to the Electrical Subcontractor(s) and copy all participants. The electrical Subcontractor shall download the drawing and incorporate, by separate layer, their own routings of conduit equal to or greater than 2", bus ducts, cable tray, junction boxes, as well as the depth of all light fixtures, access panels, etc. as required to determine the relationship and possible interferences with the plumbing, mechanical, architectural or structural items to be installed as part of the overall work. In addition the Electrical Subcontractor shall indicate the location of all electrical panels, substations, switchgear, and MCC's. The Electrical Subcontractor will be responsible to verify that the electrical lighting layout shown on these drawings is correct and to make corrections and additions of all other light fixtures as required. In areas where no mechanical work occurs, but where other crowded electrical installations are evident, the Electrical Subcontractor shall prepare similar drawings.
- 1.18 The Carpentry Subcontractor shall review each issuance of every drawing to determine any possible interference with wall, soffit or ceiling construction and resolve with the respective subcontractors. The ATC Subcontractor shall review each issuance of every drawing to determine any possible interference regarding locations of controls to ensure sufficient access to them is being maintained.
- 1.19 The Sheetmetal Subcontractor shall provide one color composite set of drawings and forward them to the Construction Manager. This composite will then be reviewed during meetings determined by the Construction Manager at which all subcontractors shall be represented in order to review and resolve any real or apparent interference or conflicts.
- 1.20 In the preparation of all the final composite drawings, large scale details as well as cross and longitudinal sections shall be made as required to fully delineate all conditions. Particular attention shall be given to the locations, size and clearance dimensions of equipment items, shafts and similar features. The final composite drawings shall include the locations of all controls, tie-ins, connections for other subcontractor's work, and pipe and duct insulation as required. Each trade subcontractor indicating their acceptance and approval of the indicated routings and layouts and their relationship with the adjoining or contiguous work of all subcontractors shall then sign off these final composite drawings. Therefore, no unauthorized deviations will be permitted. If deviations are made without the knowledge and agreement of the Construction Manager and other affected Subcontractors, the work in question will be subject to removal and correction at no additional cost to the Owner.
- 1.21 In preparing the composite drawings, minor changes in duct, pipe or conduit routings that do not affect the intended function may be made as required to avoid space conflicts, when mutually agreed. Items may not be revised, exposed items relocated or items run exposed when not intended without approval. No changes shall be made in any structural members or architectural features which affect the

function or aesthetics of the buildings. If conflicts or interferences cannot be satisfactorily resolved, the Architect shall be notified and his decision obtained.

- 1.22 After final composite drawings have been accepted and approved, the Sheetmetal Subcontractor shall print one (1) color copy to be signed by all subcontractors. The Sheetmetal Subcontractor shall provide and distribute two (2) prints to each of the subcontractors, and two (2) set of prints for submittal purposes to the Construction Manager. Subcontractors requiring further prints for their own distribution go to Building Blok to download. The original signed off drawing shall be sent to the Construction Manager for permanent possession.
- 1.23 The record copies of final composite drawings shall be retained by each subcontractor as a working reference. All shop drawings, prior to their submittal to the Construction Manager shall be compared with the composite drawings and developed accordingly by the subcontractor responsible. Any revisions to the composite drawings, which may become necessary during the process of the work, shall be noted by all subcontractors and shall be neatly and accurately recorded on the record copies. Each subcontractor shall be responsible for the up-to-date maintenance of his own record copies of the composite drawings and to keep one (1) copy available at the site. The composite drawings and any subsequent changes thereto shall be utilized by each subcontractor in its development of the as-built drawings. Note: the coordination drawings may be used as "As-builts" (with appropriate changes and changing to title block).

2. COORDINATION FOR ELECTRICAL AND CONTROLS

- 2.1 The Electrical Subcontractor and the ATC Subcontractor will prepare coordinated floor plan drawings of electrical, control devices and panel locations on architectural floor plans using 3D modeling software. All devices and panels shall be indicated on these plans with indication of the location from nearest end wall or column and the mounting height from finished floor.
- 2.2 The Electrical Subcontractor and ATC Subcontractor will prepare coordinated electrical and special systems room drawings indicating all electrical, ATC , fire alarm, security, nurse call and telecommunications panels, equipment and devices using a 3D modeling software.
- 2.3 Devices indicated on the plans shall include but not be limited to receptacles, switches, emergency power off switches, dimmers, sensors, wall mounted exit lights, fire alarm horns and strobes, fire alarm pull stations, security devices, nurse call, thermostats, humidistats, tele/data outlets and all special systems.
- 2.4 Panels indicated on the plans shall include but not be limited to lighting, power, receptacles, BAS/ATC, security and fire alarm.

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- 2.5 Plans shall show the necessary clearances in front of each panel as required by electrical codes.
- 2.6 The Carpentry Subcontractor shall review these plans and coordinate the spacing of wall studs and location of blocking to allow for the installation of the devices and panels per these coordinated drawings.
- 2.7 Failure to properly perform this coordination may require the relocation of the devices after they are installed. The subcontractor will be responsible for all relocation costs incurred which may involve but no limited to reframing work, drywall repairs and repainting.

3. COORDINATED SLEEVE DRAWINGS

- 3.1 The Sheetmetal, Plumbing, Mechanical, Fire Protection, Electrical and ATC Contractors will prepare coordinated floor and wall sleeve opening drawings for review by the Structural Engineer.
- 3.2 The above work will be for foundation walls and slabs only.
- 3.3 Coordinated drawings shall differentiate between those openings that are already indicated on the contract drawings, openings that will be sleeved prior to the floor or wall being poured and those openings that will be core-drilled.

END OF SECTION

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SECTION 01 31 19 – PRE-INSTALLATION MEETINGS

1. PRE-INSTALLATION MEETINGS

1.1 An on-site pre-installation meeting will be held at least two weeks prior to commencement of installation of work.

2. ATTENDANCE

2.1 Attendance at the pre-installation meeting is mandatory of each Contractor and/or major supplier as required for each specific meeting listed below.

2.2 The following individuals shall attend these meetings:

- Contractors' Project Manager
- Contractors' Field Superintendent
- Contractors' Safety Representative (as needed)
- Key Subcontractors, Suppliers, and Vendors
- EDiS Project Manager
- EDiS Field Manager
- EDiS Safety Director (as needed)
- EDiS MEP Specialist (as needed)
- Owner's Representative (as needed)
- Architect/Engineer (as needed)
- Governmental Agency Representatives (as needed)
- Testing/Inspection Agency Representatives (as needed)
- Utility Company Representatives (as needed)

3. SUBMITTALS

3.1 Each contractor is responsible to have all submittals and mock-ups, as related to the pre-installation meeting scope of work, submitted and approved prior to commencement of the pre-installation meeting.

4. LIST OF REQUIRED MEETINGS

- Sitework – Erosion and Sediment Control
- Sitework
 - Bulk Grading
 - Asphalt Paving
 - Concrete Curbs, Gutters, & Sidewalks
- Landscaping
- Site Utilities
- Foundations & Concrete Slabs
- Underslab Utilities
- Structural Steel Erection & Miscellaneous Metals OSHA mandated Safety Meeting
- Roofing OSHA mandated Safety Meeting

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- Building Envelope
 - Exterior Structural Stud Assembly
 - Masonry & Stone
 - Curtain Wall/Glazing/Storefronts
- Doors/Frames/Hardware
- Interior Glass and Glazing
- Finish Carpentry & Millwork
- Acoustical Ceilings/Acoustical Wall Panels
- Paint and VWC
- Flooring (VCT, Carpet)
- Terrazzo Flooring
- Hydraulic Elevators
- Kitchen Equipment
- Athletic Courts and Equipment
- Partition Walls
 - Metal Studs
 - Drywall
 - Insulation
 - Doors/Frames/Hardware
- Loading Dock Equipment
- Hydraulic Elevators
- Fire Protection
 - Fire Sprinkler Systems
 - Fire Alarm Systems
 - Ansul System
- MEP Coordination
 - Mechanical Piping Roughin
 - Plumbing Roughin
 - Insulation
 - Electrical Roughin
 - Electrical – Bonding, grounding, lightning protection
 - Automatic Temperature Controls
 - Commissioning
- Voice/Data Low Voltage Wiring
- Security System
- Audio-Visual Equipment
- Owner Furnished Equipment
- Final Cleaning

5. AGENDA

- 3.1 At a minimum, the Contractor shall be prepared to discuss the items as listed on the agenda template shown on the following page:

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PROJECT: _____

PRE-INSTALLATION MEETING : (Insert Phase of Work)

A. ATTENDEES:

<u>NAME</u>	<u>COMPANY</u>	<u>WORK ITEM</u>	<u>CONTRACT</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

B. TESTING & INSPECTION REQUIREMENTS *(THESE REQUIREMENTS COME FROM THE PROJECT MANUAL)*

C. REVIEW CONTRACT DRAWINGS AND SPECIFICATIONS

<u>Drawing / Spec No.</u>	<u>Comments / Conflicts</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

D. REVIEW SCOPES OF WORK *(SEE SECTION 01010 IN THE PROJECT MANUAL)*

E. REVIEW RELEVANT RFI'S

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F. REVIEW SUBMITTALS (*SEE THE SUBMITTAL REGISTER*)

G. REVIEW MATERIALS AND DELIVERIES

H. JOB SITE SAFETY (*SEE THE CONTRACTOR'S SAFETY PROGRAM OR OSHA*)

- Safety Plans must be submitted before the start of work
- Certificates of Insurance need to be submitted before the start of work
- Minimum PPE – Hardhats, steel toe boots, safety glasses
- Lock-out, Tag, Test and Try ALL utilities is critical before the start of demolition
- Signage & HAZCOM Requirements
- Potential Hazards
 - Excavations >4 ft
 - Slips/trips/falls
 - Existing utilities to remain and protected
 - Overhead debris
 - Power tools
 - Heavy equipment

I. COORDINATION WITH OTHER TRADES

J. ACTION ITEMS AND RESPONSIBILITY

END OF SECTION

SECTION 01 31 25 – WEB-BASED PROJECT MANAGEMENT SYSTEM

1. GENERAL PROVISIONS

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in AIA Document A201 – 2007 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, for requirements in addition to those specified in Division 1.
- 1.3 Refer to Scope Information Sheets for all contracts bound in the Project Manual under Section 011100 - SUMMARY OF WORK. The Scope Information Sheets describe generally the work included in each contract, but the work is not necessarily limited to that described.
- 1.4 All Contractors shall use Internet/Web-based project management software to transmit documents, track, and otherwise manage this project.
- 1.5 Use of this project management software will not change any contractual responsibilities of the construction team members.

2. DEFINITIONS

- 2.1 System: A real time web-based software that shares data, translates data, organizes data, facilitates communication, archives actions, and offers scheduling prompts to identified Users.
- 2.2 Users: Authorized participants of this project furnished with a unique password and authorized to access the system to view/input/export data. Owner, Construction Manager, Architect, and the Contractors are all Users. Other Users may be added as necessary.
- 2.3 Contacts: Entities identified to automatically receive specific transmissions or entities selected to receive specific information sent by the system through to an e-mail address.
- 2.4 Signees: Those individuals identified, by the Contractors, authorized to sign change orders and payment applications via electronic signature. This electronic signature is as contractually binding as an original signature on paper.

3. USE OF SYSTEM

- 3.1 The use of the system is mandatory for the documentation of the transmittal of all non-oral information, even if the actual transmission of the information is by another means.
- 3.2 The use of the system will be mandatory by the Contractors to send, retrieve, and respond to data.

3.3 In addition to this web-based project management system, the Contractors will be required to use electronic mail (email) for day-to-day communication and correspondence. Email will be the primary means of transmitting written communication (i.e. meeting minutes, draft pay applications, etc.).

4. QUALITY ASSURANCE

4.1 A three hour training session in the use of the software for this project will be offered by the Construction Manager at a location convenient to the project site. Attendance by one member of each Contractor's organization is mandatory. Additional attendees may enroll based on availability of training space. All attendees must have a working knowledge of computers. Training can not begin until three working days after the receipt of the submittals indicated below.

4.2 Technical assistance will be provided by on-line help, email, or telephone for all Users throughout the life of the project.

5. SUBMITTALS

5.1 Submit to the Construction Manager, within 5 days following the receipt of the letter of intent to award, in an electronic template, the following:

- a. Electronic logo of organization (as needed)
- b. Names, mailing address and electronic address of its Users and Contacts.
- c. Designation the role/responsibility for each User

6. SOFTWARE AND HARDWARE REQUIREMENTS

6.1 Each User shall provide and maintain a computer with high speed internet access and an email address. The computer shall have a high speed internet browser (Internet Explorer 8.0 or higher, Firefox version 3.6.12 or higher, Google Chrome or Safari version 5.0 or higher) and a high speed cable Internet access, high speed DSL or T1 line.

6.2 License(s) to Use System - Each Contractor will be provided unlimited licenses to use the system for this project. Each license will allow secure unlimited usage from the notice to proceed until the original contract completion date.

7. SYSTEM DESCRIPTION

7.1 The web based project management system is a "secure, real-time, interactive, centralized database" specifically established and maintained for the management of this construction project. The product is designed to facilitate communication and improve the time management of its users by facilitating the sharing of information. Information will be available 24/7, from any computer meeting the specifications listed above. The information is fully protected. The

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electronic platform allows information to be transmitted across the internet reducing printing and postage costs and the time associated with such activities.

- 7.2 The system contains a directory of the project participants.
- 7.3 The system includes templates, with the CM's letterhead, for each document created inside the system. The template allows the use of "pull down" menus to complete significant portions of each document.
- 7.4 The system allows the templates (and attached documents created outside the system) to be distributed to Users and Contacts.
- 7.5 The System contains "translation software" to permit the viewing (and marking) of documents created outside the system. The system can view documents created by different software programs and can deliver images of its translation to any computer meeting the criteria listed above.
- 7.6 The system can be personalized by the Construction Manager to automatically send e-mail notices upon issuance of certain documents if such a practice facilitates the User's business needs.
- 7.7 The system is the product of Building Blok, LLC (www.buildingblok.com) and will be continuously updated.
- 7.8 The Construction Manager will administer the Building Blok User accounts for this project.

8. DOCUMENTS CREATED INSIDE THE SYSTEM

- 8.1 The following documents shall be created on templates inside the system.
 - a. Transmittals for submittals processed in the system. The transmittals are automatically created by the system when the submittal is uploaded.
 - b. Submittal Register showing all of the submittals required of the contract, assigned to each Contractor.
 - c. Submittal Log: The CM will maintain submittal log after it is initialized.
 - d. RFI (Requests for Information)
 - e. Change Orders
 - f. RFP (Requests for Proposal)
 - g. ASI (Architect's Supplemental Instructions)
 - h. Tasks & Memos as determined by the CM
 - i. Payment Applications
 - j. Closeout Tracking Log
- 8.2 The following documents may, at each Users option, be created on the system.
 - a. Morning & Afternoon Activity Reports generated by the system
 - b. E-mails: Contacts that do not have access to the system may be sent information from the system, by the system.

- c. Reports of information on the system
- d. Project Notices: "Broadcast" messages can be sent to other Users system entry screen.

9. DOCUMENTS CREATED OUTSIDE THE SYSTEM AND DISTRIBUTED BY THE SYSTEM

9.1 The following documents are expected to be created outside the system and distributed through the system. The actual documents may be scanned or electronically attached to the transmittal.

- a. Technical Submittals: Shop drawings, product data, testing reports, certifications, installation instructions, operation & maintenance manuals, will be submitted and distributed through the system. The Architect will return all submissions through the system electronically. The Construction Manager will distribute submittals (after Architect's action) electronically. Contractors may download and distribute submittals to their subcontractors and suppliers or elect to print paper copies for distribution, or both.
- b. Photographs: Digital photographs and scanned images can be loaded onto the system and shared.
- d. Schedule of Values/ Payment Applications: (The "pencil" review of these documents can occur inside the system).
- e. Change Orders: (The "pencil" review of these documents can occur inside the system.)
- g. Schedules: The schedule document(s) will be available for review on the system.
- h. Data created in other software may be uploaded to the system electronically.

10. DOCUMENTS CREATED OUTSIDE THE SYSTEM AND DISTRIBUTED OUTSIDE THE SYSTEM

10.1 The following documents are expected to be created outside the system and distributed outside the system. The actual documents may be scanned or electronically attached to the transmittal.

- a. Schedules: The Construction Manager will develop the Master Schedule through Microsoft Project 2003. The schedule will be distributed either through hard copies at meetings or through email.
- b. Product samples, color samples, physical samples are still required to be provided per the technical specifications, however, the transmittal documenting the distribution shall be done inside the system and submitted electronically and printed to accompany the actual submission.
- c. Meeting minutes will be created using Microsoft Word 2003 and distributed through hard copies at meetings or through email.
- d. AIA closeout documents, which require an "original" signature, will be created and distributed outside the system.

END OF SECTION

SECTION 01 32 16 - CONSTRUCTION SCHEDULE

1. PRE-BID CONSTRUCTION SCHEDULE

1.1 Time is a critical element of this Project. By entering a bid, the Contractor agrees to adhere to the intermediate Milestone Dates and Dates of Substantial and Final Completion established herein. The Contractor also understands that all work must be performed in an orderly and closely coordinated sequence in order to achieve the specified Milestones and Completion Dates, and the Contractor hereby agrees to perform his work in conformance with the Pre-Bid Construction Schedule established herein, or with the then current and approved Project Construction Schedule as amended from time to time by the Construction Manager.

1.2 The Pre-Bid Construction Schedule includes allowances for time lost due to adverse and abnormal weather conditions, other than floods, hurricanes, tornadoes, lightning and other like acts of God. The Contractor understands and agrees that it shall not be entitled to any extensions of the Contract Time or adjustment to the Contract Sum, except as allowed in the General Conditions of the Contract for Construction. The Contractor further acknowledges that the Work may be required to be performed during the winter season, that conditions during this season may be adverse and abnormal, but that such conditions will not be the basis for an extension of the Contract Time or adjustment to the Contract Sum.

2. SCHEDULING OF THE WORK AFTER AWARD OF CONTRACT

2.1 After award of Contract, or issuance of a Notice to Proceed, the Contractor will meet with the Construction Manager to review the Pre-Bid Construction Schedule, and the overall project plan for construction. Following the above review the Contractor will meet with each subcontractor and supplier to view the detailed plans for performing his Work. Following these meetings and within fourteen (14) days after award of the Contract or issuance of a Notice to Proceed, the Contractor shall prepare and submit for the Construction Manager's approval a Work Schedule providing for the expeditious, timely and practical execution of the Work. The Contractor's Work Schedule shall include activity descriptions and durations for shop drawings, fabrication, delivery and installation. If the Construction Manager so requests, the Contractor shall provide adequate explanation regarding crew sizes, production rates and similar data used to arrive at the durations and sequences.

2.2 The Construction Manager shall review the Contractor's Work Schedule, coordinate it with the separate work by other contractors, the Owner and the Construction Manager, and after coordination, shall incorporate it into the approved Project Construction Schedule. The approved Project Construction Schedule shall be issued to the Contractor and the Contractor shall perform his Work in conformity therewith.

2.3 The Contractor shall submit proposed schedule revisions and obtain the written

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approval of the Construction Manager therefore before deviating from the Project Construction Schedule. Work to start July 2013 and be complete and functional by March 15, 2014.

2.4 The Construction Manager will incorporate approved schedule revisions into the Project Construction Schedule, and shall otherwise update and revise the Project Construction Schedule as the Construction Manager, at his sole discretion, deems necessary.

2.5 Project schedule attached.

3. ADHERENCE TO THE SCHEDULE

3.1 The Contractor shall start each part of its Work on the date designated for start in the approved Project Construction Schedule unless advised by the Construction Manager. The Contractor shall carry the Work forward expeditiously with adequate forces, equipment and materials, and shall complete each part of his work on or before the date designated in the approved Project Construction Schedule.

3.2 If the Construction Manager determines that the Contractor is behind schedule, the Construction Manager shall have the right to require that the Contractor take steps, at the Contractor's expense, to accelerate its Work. Such steps shall include increases in manpower, equipment and materials and/or overtime as the Construction Manager may deem necessary. If the Contractor fails to comply with the Construction Manager's instructions relating to improved rate of progress, the Contractor may be held in default under the appropriate provisions of the General Conditions of the Contract.

3.3 Each Contractor shall, if directed by the Construction Manager, provide the Construction Manager a 2-week look ahead of anticipated manpower showing the number of men, classification, and anticipated work.

3.4 Work to be awarded April 29, 2013 and be complete by March 1, 2014.

END OF SECTION

SECTION 01 32 19 - SUBMITTAL REGISTER

1. SUBMITTALS/SUBMITTAL REGISTER

- 1.1 The Contractor shall submit all items listed or specified within the sections of the Specifications included in its Work. Submittals shall include such items as: contractor's, manufacturer's or fabricator's drawings; descriptive literature including, but not limited to, catalog cuts, diagrams, operation charts or curves; test reports; samples, operations and maintenance manuals, including parts lists; certifications; warranties and other required submittals. Submittals pertinent to materials and equipment which are subject to advance approval shall be scheduled and made prior to the acquisition or the delivery thereof.
- 1.2 The Contractor shall carefully control procurement operations to assure that each individual submittal is made on or before the dates required for timely performance of its Work.
- 1.3 Within seven (7) days after award of Contract or issuance of Notice to Proceed, the Contractor shall execute and submit to the Construction Manager; An electronic Excel format document identifying the complete submittal register for future project submittals. The register shall contain a list of each item of equipment and material of each type for which fabricator's drawings and/or related descriptive data, test reports, samples, spare parts, operation and maintenance manuals, or other types of submittals required by the Specifications. The order of listing of items on the Register shall conform to the sequence of the items as they occur within the divisions. Drawings of component items forming a system or that are interrelated shall be scheduled to be correlated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time shall be allowed for review and approval and possible resubmittal of any item subject to approval, because no delay damages or time extensions will be allowed for time lost in late submittals or resubmittals. The Construction Manager and Architect/Engineer will review the Submittal Register for approval action. The approved Register will become a part of the Contract and Contractor will be subject to requirements thereof. The Contractor shall revise and/or update the Register monthly to take into account all changes in the Contract. Each such revised edition and/or revision to the Register shall be resubmitted to the Construction Manager. This Register shall be coordinated with related submittals of other Contractors.

2. SAMPLES

- 2.1 Submit tagged or labeled samples in triplicate, unless another quantity is otherwise specified by the Construction Manager.
- 2.2 Tags or labels shall be securely affixed and contain as a minimum the following information: Project Name, Contractor's Name, Contract Title and Number, Date, Transmittal Number, Product Manufacturer's or Fabricator's Name and Product Identifier.

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END OF SECTION

SECTION 013226 - SUBCONTRACTOR DAILY REPORTS

1. SUBCONTRACTOR DAILY REPORTS

1.1 The Subcontractor shall submit a Daily Report to the Construction Manager on the forms provided covering the following subjects:

1. Work in Progress, including areas where work is being performed, nature of the operations in progress, and the manpower assigned.
2. Extra Work (Time and Material) in progress.
3. Materials Received.
4. Trade labor breakdown including identification of all workers on site and the number of hours (or portions thereof) worked by each.
5. *Inspection Checklist (performed daily).*

1.2 The Subcontractor shall submit the Daily Report to the Construction Manager by 9:00 AM on the next workday following the workday covered in the Daily Report.

2. DAILY EXTRA WORK REPORT

2.1 The Subcontractor shall submit on the form provided a Daily Extra Work Report on each day he performs authorized Extra Work on a time and material basis.

2.2 A separate Daily Extra Work Report shall be submitted for each separate authorized Extra Work item done on a time and material basis.

2.3 The Subcontractor shall submit his Daily Extra Work Report as an attachment to his Daily Report by 9:00 AM on the next workday following the workday covered in the Daily Extra Work Report.

3. Sample Daily Report

3.1 A sample daily report follows this section for your reference.

END OF SECTION



CONTRACTOR'S DAILY REPORT

Project Name: _____

Date: _____

Contractor: _____

Contract No. & Description: _____

Weather: _____

Foreman's Name (Print) _____

TRADE	*CLASS	MANPOWER COUNT	TOTAL MAN HOURS	TODAY'S DESCRIPTION / LOCATION OF WORK
TOTAL				

* INDICATE: F = FOREMAN; J = JOURNEYMAN; A = APPRENTICE

Work Status/Work Planned: _____

Construction Equipment: _____

Qualified Operator(s) _____

Deliveries or Materials: _____

Machinery, tools, material, and equipment to be used: _____

Inspection of work area, machinery, tools, material, or equipment _____

The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement is prohibited. Such machine, tool, material or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

Please See Other Side

Below is a general checklist of requirements on this project. Contractors will check off items that pertain to their contract and project tasks. Notify EDis Field Manager of any issues. This checklist is not meant to be all inclusive. Please refer to additional OSHA regulations for compliance.

House Keeping

- Material Storage Area's Orderly
- Trash Containers Available and Emptied daily
- Fire Hazards
- Lighting and ventilation
- Exits and Stair clear passage
- Walkways, corridors clear passage
- Daily debris /trash removal
- _____

Personal Protective Equipment

- Hard Hats being worn
- Safety Glasses with side shields being worn
- Secondary Eye/Face protection
- Respirators as required
- Hand protection when needed
- Ear protection when needed
- Inspected & Maintained
- _____

Fire Prevention

- Fire extinguishers inspected
- Flammable / Combustibles properly store
- Approved Fuel cans used and labeled
- Oxygen / Acetylenes stored properly
- _____

Electrical

- GFI in use
- Three prong insulated extension cords used
- Extension cords in good condition
- Lockout / Tag-out program in use
- _____

Excavations

- Miss Utility been contacted
- Properly Barricaded
- Ladders in use at depths over 4'-0"
- Ladders every 25'-0" distance
- Shored, sloped, benched as required
- Dewatering as needed
- _____

Ladders

- Good condition
- Correct pitch
- Extends 3'-0" above landing
- Open and secured / tied off
- _____

Scaffolds

- Certified Scaffold Installer
- Guardrails, toe boards, and planking secured
- Appropriate signage
- Adequate cross bracing
- Secured to building over 25'-0" in height
- _____

Cranes

- Rated Load Capacity available in cab
- Swing Radius barricaded
- Appropriate certificates / decals / hand signals
- Daily safety inspection log completed
- _____

Fall Protection

- Fall protection plan on file
- Full harness / shock absorbing lanyard used
- Anchoring points secured
- Perimeter barricades
- Open sided floor protection
- 6'-0" Tie-off utilized
- _____

Paperwork

- MSDS Information
- Contractors Safety Program
- Hazardous Communications Training
- Hazardous Communications Program
- Contractor Qualified Representation
- _____

Other

- _____
- _____

Foreman / Competent Person:

Print Name _____

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SECTION 01 33 00 – SUBMITTAL PROCEDURES

1. GENERAL PROVISIONS

1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.

2. ITEMS TO BE SUBMITTED AT START OF WORK

2.1 Performance/Labor and Material Payment Bond(s): One (1) copy of each bond simultaneously with the signed Agreement. See General Conditions Article 11.4 and Supplementary Conditions.

2.2 Policies or Certificates of Insurance: Two (2) copies simultaneously with the signed Agreement. See General Conditions Article 11 and Supplementary Conditions.

2.3 Contractor's License: Submit a copy of all business licenses required by local and state agencies.

2.4 Contractor's Schedule of Values: Submit for approval within 21 days after the Agreement is signed through the Building Blok Management Program.

2.5 Contractor's Progress Schedule: Two (2) copies for review and reference within 21 days after the Agreement is signed. See General Conditions Article 3.10 and provisions in this Section.

2.6 Submittal Schedule: In Excel electronic format within 21 days after the Agreement is signed. See provisions in this Section.

2.7 Products List: In Excel format for approval within 30 days after the Agreement is signed. See provisions in Section 016200 - MATERIAL AND EQUIPMENT.

3. NON-RESIDENT CONTRACTOR & SUBCONTRACTORS BONDS

3.1 Refer to requirements in Section 011100 - INSTRUCTIONS TO BIDDERS for filing of Surety Bonds with the Division of Revenue.

3.2 If such bonds are required on this project, it will be the responsibility of the Contractor to produce evidence to the Construction Manager that they have been filed, or if not required, to supply a notarized statement that they are not required. This must be done within seven (7) days after award of Contract and in any event before construction starts.

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4. RELATED REQUIREMENTS

4.1 See Section 017700 - CONTRACT CLOSE OUT: for submittal requirements for Contract Close out.

5. SUBMITTALS

5.1 All submittals shall be directed to the Construction Manager utilizing the Building Blok Management System.

5.2 Prepare a Submittal's Schedule in Excel electronic format for Shop Drawings, Product Data and Samples. Show:

1. The dates for Contractor's submittals.
2. The dates submittals will be required for Owner-furnished products.
3. The date approved submittals will be required from the Architect.

5.3 Should the Architect or Construction Manager elect to omit any items from the list of items to be reviewed, it shall not relieve the Contractor from compliance with the Contract Documents with regard to that item. In such instance, the Contractor may still elect to have submittals prepared for his own use without review by the Architect or Construction Manager.

6. SHOP DRAWINGS

6.1 Conform to provisions in General Conditions applying to Shop Drawings.

6.2 Present in a clear and thorough manner.

1. Identify details by reference to sheet and details, schedule or room numbers shown on Contract Drawings.
2. Submit through the Building Blok Management System.

7. PRODUCT DATA

7.1 Conform to provisions in General Conditions applying to Product Data.

7.2 Preparation:

1. Clearly mark each copy to specifically identify products or models pertinent to project.

2. Show performance characteristics and capacities.
3. Submit through the Building Blok Management System.
4. Show dimensions and clearances required.
5. Show wiring or piping diagrams and controls.

7.3 Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams to delete information which is not applicable to the Work.
2. Supplement standard information to provide information specifically applicable to the Work.

8. SAMPLES

8.1 Conform to provisions in General Conditions applying to Samples.

8.2 Provide samples of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the project, with integrally related parts and attachment devices.
2. Full range of color, texture and pattern.
3. Submit through the Building Blok Management System.

8.3 Field samples and mock-ups; See requirements, if any, in other specification Sections.

9. SUBMITTAL REQUIREMENTS

9.1 Make submittals promptly through the Building Blok System in accordance with published schedule, and in such sequence as to cause no delay in the Work or in the Work of any other contractor.

9.2 Number of submittals required.

1. Shop drawings and Product Data: All submittals through the Building Blok Management System, shop drawings for temporary steel, steel and miscellaneous steel, MEP shop drawings shall also provide one (1) paper copy for approval and ultimate use by the Construction manager for field verification. Any additional copies required by the Contractor shall be made by him.

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2. Samples: Submit four (4) each. Submit all data and pictures of samples through the Building Blok Management System. Physical samples to be noted on Building Blok submittal and supplied to Construction Manager for processing. When approved it will be returned to the Construction Manager to be retained at the site for reference use.

9.3 Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.
3. Contract identification.
4. The names of the Contractor, Supplier and Manufacturer.
5. Identification of the product, with the specification section number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the Work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents.
10. Identification of revisions on resubmittals.
11. An 8 inch x 3 inch blank space for Contractor and Architect's stamps.
12. Contractor's stamp, initialed or signed, certifying review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents. Submittals which have not been stamped with this stamp or its approved equivalent will be returned without being reviewed.

- 9.4 Shop Drawing coordination and interface with work of other Contracts and adjacent work is the responsibility of each individual Contractor.

10. RESUBMISSION REQUIREMENTS

- 10.1 Make any corrections or changes in the submittals required by the Architect and

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resubmit until approved.

10.2 Shop drawings and Product Data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
2. Indicate any changes which have been made other than those requested by the Architect.

10.3 Samples: Submit new samples as required for initial submittal.

11. FINAL DISTRIBUTION OF APPROVED SUBMITTALS

11.1 The Construction Manager will distribute copies of Shop Drawings and Product Data which carry the Architect's stamp through Building Blok to:

1. Contractor that made submittal.
2. Jobsite File.
3. Record Document File.
4. Other Contractors, as required for coordination.

11.2 The Construction Manager will distribute samples as required.

11.3 The Contractor will distribute copies of Shop Drawings and Product Data which carry the Architect's stamp to:

1. Subcontractors.
2. Suppliers.
3. Fabricators.

12. SCHEDULE OF VALUES

12.1 Use AIA Document G703, Continuation Sheet to G702. As formatted on the Building Blok Management System.

13. PROGRESS SCHEDULE

13.1 Prepare schedules in the form of a horizontal bar chart.

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1. Provide separate horizontal bar chart for each trade or operation.
 2. Horizontal time scale: Identify the first work day of each week.
 3. Scale and spacing: To allow space for notations and future revisions.
 4. Minimum sheet size 11 inches by 17 inches.
- 13.2 Format of listings: The chronological order of the start of each item of work.
- 13.3 Show the complete sequence of construction by activity.
- 13.4 Show the dates for the beginning, and completion of, each major element of construction such as:
1. Site clearing.
 2. Site utilities.
 3. Foundation work.
 4. Structural framing.
 5. Subcontractor work.
 6. Equipment installation.
- 13.5 Show projected percentage of completion for each item as of the first day of each month.
- 13.6 Update Progress Schedule monthly and submit with Application for Payment and Schedule of values.
- 13.7 Indicate progress of each activity to date of submission.
- 13.8 Show changes occurring since previous submission of schedule:
1. Major changes in scope.
 2. Activities modified since previous submission.
 3. Revised projections of progress and completion.
 4. Other identifiable changes.

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- 13.9 Provide a narrative report as needed to define:
1. Problem areas, anticipated delays and the impact of the schedule.
 2. Corrective action recommended, and its effect.
 3. The effect of changes on schedules of other prime contractors.
- 13.10 Submit one reproducible transparency.
- 13.11 After review, distribute copies of the schedule to:
1. Jobsite File.
 2. Subcontractors.
 3. Architect.
 4. Owner.
- 13.12 Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

END OF SECTION

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SECTION 01 35 00 – CONTRACTOR EMPLOYEE BACKGROUND CHECK

1. It is the contractor's responsibility to perform background checks and screen all employees working onsite. The background check must include checking for a previous history of Child Abuse Convictions, Child Molestation Convictions, Felony Convictions, and Drug Convictions within the last 5 years. Any employee with any of these convictions may not enter the job site or school campus. This background check must be completed and screened by the contractor prior to an employee entering the job site. The Construction Manager, The Owner's representative and the Owner have the right to request that the screening data be submitted on a case by case basis.

END OF SECTION

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SECTION 013523 - SAFETY PROGRAM

1. GENERAL

- 1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety activities and programs in connection with the Work.
- 1.2 Contractor shall be responsible for the safety of its personnel.
- 1.3 Hard hats and safety glasses must be worn by all personnel on the jobsite, except in contractor's administrative office/trailer. All equipment must comply with OSHA standards. All job site personnel shall wear long pants, shirts (no tank tops) and work boots.

2. SAFETY PROGRAM

- 2.1 Prior to commencing the Work, the Contractor shall submit to the Construction Manager (1) electronic copy and (1) bound copy of its safety program and one (1) copy of MSDS information in a 2" ringed notebook. One paper copy of the safety program and MSDS will be retained by the Construction Manager in the field office.
- 2.2 The safety program shall outline those hazards peculiar to the Contractor's Work, and the steps to be taken to eliminate or reduce the risk of injury or loss due to those hazards. The program shall be site specific. Contractor shall implement and enforce its safety program, which is in accordance with all OSHA, Federal, State and local laws.
- 2.3 Contractor shall designate a qualified Safety Supervisor to implement their safety program. Unless otherwise approved by the Construction Manager, the Safety Supervisor shall be the Contractor's Field Superintendent/Foremen.
- 2.4 Contractor shall furnish the names and qualifications of the competent persons and qualified persons who may be required for their scope of work by the Contractor's safety procedures, and by federal, state and/or local regulations. Examples include competent persons and/or qualified persons for steel erection, excavation, scaffold erection, confined space entry, crane and rigging operations, annual crane inspections, fall protection including horizontal lifeline systems, etc. See the attached Competent/Qualified Person Designation Log.
- 2.5 Contractor shall provide written certification showing that all employees have been trained on the Contractor's Safety Program. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the certification record shall

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include the date the employer determined the prior training was adequate rather than the date of actual training. The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury. Please forward certification (document) of training for each employee on an EDiS project. The latest training certificate shall be maintained.

- 2.6 Contractor shall provide certification of training on the following programs, as they pertain to your contract and project tasks: Scaffold, Fall Protection, Crane Operator, Signal Person, Crane Maintenance, Steel Erection Fall Protection, Respiratory Protection, Powder-Actuated Tools, and Motor Vehicles. Certification of training must include: Employee's name, date of training, person conducting the training, topics covered, and a statement that the student has successfully completed the course. This list is not meant to be all inclusive; please refer to OSHA regulations for applicable safety requirements.
- 2.7 Contractor Daily Reports with Safety Inspection Checklist will be submitted daily to Field Manager, verifying inspection of work area, machinery, equipment and tools.
- 2.8 Prior to starting work on-site, the Contractor shall arrange with the on-site Field Manager to have their employees complete the EDiS Company Zero Accidents Safety Orientation program.
- 2.9 Contractor shall hold weekly safety toolbox talks with all of its employees every Monday at 12:30 PM. The Contractor shall designate a responsible, capable person to conduct these meetings. Contractor's safety supervisor or superintendent must submit to the Construction Manager weekly toolbox talks attendance sheets and the topics discussed.

3. SUBSTANCE ABUSE POLICY STATEMENT

The Construction Manager is committed to providing a safe work site environment for its employees and Contractors' employees. The Construction Manager does not condone or permit employees and Contractors' employees to use or be under the influence of drugs or alcohol while they are on any of the Construction Manager's work sites. The Policy is as follows:

- 3.1 It is a violation of the Construction Manager's policy for employees and Contractors' employees to use, possess, sell, trade, or otherwise engage in the use of illegal drugs and alcohol.
- 3.2 It is a violation for employees and Contractors' employees to report to work while influenced by illegal drugs or alcohol.
- 3.3. It is a violation for employees and Contractors' employees to use prescription drugs

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illegally (i.e. to use prescription drugs that have not been legally obtained) and to use prescription drugs in a manner other than the prescribed intentions.

- 3.4 Employees and Contractors' employees who are taking medication, which is prescribed by their physician, are expected to discuss potential side effects with their prescribing physician, as it relates to the work requirements.

Violations of this policy will require disciplinary action. If any employees or Contractors' employees are observed or suspected of being influenced by drugs or alcohol, they will be instructed to stop work and may be required to leave the work site.

4. EXECUTION

4.1 Contractor shall comply with all applicable federal, state and local laws, regulations and orders relating to occupational safety and health, and related procedures, and shall, to the extent permitted by law, indemnify and hold Construction Manager, Owner and Architect, and their respective directors, officers, or agents and employees, harmless from any and all liability, public or private, penalties, contractual or otherwise, losses, damages, costs, attorney's fees, expenses, causes of action, claims or judgments resulting from a claim filed by anyone in connection with the aforementioned acts, or any rule, regulation or order promulgated thereunder, arising out of the Contractor's Work, this Agreement or any subcontract executed in prosecution of the Work. Contractor further agrees in the event of a claim of violation of any such laws, regulations, orders or procedures arising out of or in any way connected with the performance of this agreement, Construction Manager may immediately take whatever action is deemed necessary by Owner and/or Construction Manager to remedy the claim or violation. Any and all costs or expenses paid or incurred by Owner and/or Construction Manager in taking such action shall be borne by Contractor, and may be deducted from any payments due Contractor.

4.2 The Contractor agrees to (1) take all necessary steps to promote safety and health on the job site; (2) cooperate with Owner and/or Construction Manager and other Contractors in preventing and eliminating safety and health hazards; (3) train, instruct and provide adequate supervision to ensure that its employees are aware of, and comply with, applicable Federal and State safety and health laws, standards, regulations and rules, safe healthful work practices and all applicable safety rules, regulations and work practices and procedures (4) not create any hazards or expose any of its employees, employees of the Owner and/or Construction Manager or employees of Contractors to any hazards; and (5) where the Contractor is aware of the existence of a hazard not within its control, notify the Construction Manager of the hazard as well as warn exposed persons to avoid the hazard.

4.3 The Contractor's Superintendent or Safety Supervisor shall immediately, verbally report, and promptly thereafter confirm in writing to the Construction Manager any unsafe conditions or practices that are observed, or violations of job safety which are

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- not within the Contractor's control.
- 4.4 Contractors shall immediately, verbally report, and promptly thereafter confirm in writing, to the Construction Manager any unsafe practices or conditions that are observed which are not under the Contractor's control.
- 4.5 The Contractor's Superintendent or Safety Supervisor shall insure that adequate first aid supplies are available, and that personnel are qualified to administer first aid/CPR, as required by State and/or Federal regulations.
- 4.6 Contractor shall promptly notify Construction Manager of any personal injury requiring medical treatment of any of the Contractor's employees at the Project site; or of significant damage to property arising in connection with Contractor's performance, as promptly as possible after the occurrence of such injury or damage. Within twenty-four hours of such occurrence, Contractor shall furnish to Construction Manager a complete written report of such injury or damage.
- 4.7 Contractor certifies that the forgoing terms shall be made applicable to all Contractors' suppliers, materialmen or anyone furnishing labor and/or materials to the site.
- 4.8 The Contractor shall continue to educate his job Safety Supervisor or Superintendent of their responsibilities, which shall include:
1. Instructing workers and subcontractors under its supervision in safe work practices and work methods at the time they are given work assignments.
 2. Ensuring that its workers and subcontractors have and use the proper protective equipment and suitable tools for the job.
 3. Continuously checking to see that no unsafe practices or conditions are allowed to exist on any part of his job.
 4. Acquainting its workers and subcontractors with all applicable safety requirements and seeing that they are enforced.
 5. Setting a good example for his workers.
 6. Making a complete investigation of accidents to determine facts necessary to take corrective action.
 7. Promptly completing a "Supervisor's Investigation Form" with his Supervisor's assistance and distributing as required. This form will be provided by the Construction Manager.

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8. Holding weekly "tool box" safety meetings with his men to:
 - a. Discuss observed unsafe work practices or conditions including a review of current Construction Manager safety report.
 - b. Review the accident experience of his crew and discuss correction of accident causes.
 - c. Encourage safety suggestions from his men.
9. Seeing that prompt medical treatment is administered to an injured employee.
10. Correcting or reporting immediately to job superintendent any observed unsafe conditions, practices or violations of job security.
11. Making all reports required by these Contract Documents to the Construction Manager in a full and timely fashion.

5. SAFETY MEETINGS

- 5.1 The Contractor's Project Manager or Superintendent shall attend weekly or biweekly supervisory job meetings. The first topic of these meetings will be job site safety. The weekly safety reports will be reviewed and violations must be corrected immediately. Contractors will be encouraged to participate in the on-going jobsite safety.

6. TOOL BOX SAFETY MEETINGS

- 6.1 The Contractor shall schedule weekly "tool box" safety sessions to be held by his job safety supervisor or superintendent for all of his employees.
- 6.2 A member of the Contractor's management staff shall periodically attend "tool box" safety sessions to evaluate their effectiveness and offer any appropriate suggestions for improvement.

7. REPORTS

- 7.1 Contractors shall report all accidents or injuries on a timely basis in accordance with all applicable regulations.
- 7.2 Contractors shall promptly complete an accident investigation report of all accidents.
- 7.3 A record of all "tool box" safety sessions shall be made and submitted to the Construction Manager on forms to be provided.

8. SAFETY REPRESENTATIVE

- 8.1 The Construction Manager may employ the services of a Safety Representative on the project.
- 8.2 The Safety Representative *will* visit the job site on a weekly basis to determine if the work is being performed in a safe manner and in accordance with OSHA, State and Local safety regulations. Safety representative is not responsible for observing and documenting all possible safety violations. The Contractor's Safety Representative or Superintendent shall attend job site safety inspections with the Safety Representative on a weekly basis.
- 8.3 The Safety Representative will file a written report with the Construction Manager at the end of each inspection listing the safety violations observed during the inspection.
- 8.4 The Construction Manager will distribute the Safety Representative's report to all Contractors. All safety violations must be corrected immediately.

9. RIGHT TO STOP THE WORK DUE TO SAFETY VIOLATIONS

- 9.1 The Construction Manager, in its sole discretion, may order the Contractor to stop the work due to safety violations under the following circumstances:
 1. If the Construction Manager observes the Contractor is violating safety regulations and the Contractor takes no immediate action to correct the violation.
 2. If the Contractor has been notified by the Construction Manager in writing that he is in violation of safety regulations and fails to take action to correct the violation within 24 hours of the notice.
- 9.2 If the Construction Manager directs the Contractor to stop the work due to safety violation, it will be done in accordance with the General Conditions of the Contract. Contractor shall not be permitted an adjustment of the Contract Time or Sum for the days lost to any suspension of work.
- 9.3 If the Construction Manager or Safety Representative observes Contractor's employee violating this safety program or OSHA Standards in an habitual manner, or creating a serious life safety violation, the Construction Manager or Safety Representative may instruct the Contractor's superintendent or foreman to remove the violator from the work site for failure to comply with the safety program and the contract.

10. EMERGENCY PROCEDURES

- 10.1 The Construction Manager shall establish a central meeting location for the assembly of all Contractors' employees in the event of a major job site emergency.

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10.2 Contractor shall assemble all of their personnel and account for all employees. Contractor must immediately report to the Project Superintendent with the status of their employees.

11. FALL PROTECTION PROCEDURES

11.1 Contractor is responsible, in accordance with federal, state, local laws and regulations including OSHA, to provide and enforce their own site specific fall protection program and equipment. The following fall protection procedures shall be enforced by all Contractors as a minimum standard.

All workers on walking/working surfaces with unprotected sides or edges six feet (6') or higher above the next lower level must be protected from falls by the use of guardrail systems, net systems, fall arrest systems or control access zone programs. It is intended that when fall protection is required, it is required 100% of the time. All contractors are reminded that relevant industry regulations require that contractors comply with the following standards.

1. Workers constructing or working near leading edges must be protected.
2. Workers on the face of formwork or reinforcing steel must be protected at a height of 6 feet (6') or greater.
3. Scaffolds shall be guarded at 6 feet (6') above next lower level.
4. Brick layers performing overhand bricklaying and related work six feet (6') or higher above lower levels must be protected from falls.
5. Roofers must comply with OSHA standards for roof work.
6. The Contractor's controlled access zone plan shall be included in their site-specific safety program and shall be submitted prior to the start of work. Contractors are responsible for assuring programs are OSHA compliant.
7. Guidelines for Residential Construction or any interpretations will not be accepted in lieu of 1926 Standards.
8. Contractors must provide certification per OSHA CFR29 § 1926.503(b) of employee training and retraining on fall protection upon request.

11.2 Contractor shall provide its own fall protection. Fall protection may be provided by guardrail systems, net systems, or personal fall arrest systems. All fall protection systems must comply with OSHA standards.

11.3 Stepladders, exposed to shafts or edges of the building, greater than six feet (6') above

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the next lower level, must be tied off or otherwise secured. Employee must wear fall protection, i.e. harness/lanyard.

11.4 The Safety Cable System shall not be altered or removed without a written request submitted to the Project Manager with a copy to the Field Manager. It shall be the responsibility of each and every Contractor that is removing or altering the Safety Cable System to maintain the fall protection safety provided by the safety cable and not leave the area unprotected. Each and every Contractor shall be responsible to re-install the Safety Cable System immediately after work is completed. Each and every Contractor shall be responsible to re-install the Safety Cable System in accordance to OSHA standards.

11.5 Fall protection will be enforced for Structural Steel Erectors.

1. As for a Contractor engaged in structural steel erection, the Contractor is specifically advised that structural steel erectors shall comply with all protection requirements for all work at a height of six feet (6') or greater above the next lower level, 100 percent of the time, by any of the following means.
 - a. Standard guardrail system.
 - b. Personal Fall Arrest System (PFAS) – full body harness with shock absorbing lanyard. Maximum free fall distance permitted, with lanyard and lanyard attachment shall not exceed six feet (6'). Anchor point must be capable of supporting five thousand pounds. Perimeter guard cables or alignment cables may not be used for anchor points.
 - c. Access to work area shall be provided by ladders. There shall be sufficient number of ladders available to reduce the amount of "beam walking." When it is absolutely necessary to traverse a beam, 100% fall protection must be utilized.
 - d. Steel erection Contractors must, at all times, be able to certify in writing that each of his employees has been properly trained in both OSHA fall protection standards and the Contractor's site specific project fall protection procedures.
 - e. Prior to the erection of the steel, the Contractor shall meet with the Project Manager and Safety Representatives to review and document site specific procedures.

END OF SECTION

Certification of Training Documents to be Submitted with Safety Policy/Program

Provide a certification of training for employees on your safety program.

In addition, Contractor shall provide certification of training on the following programs, as they pertain to your contract and project tasks. Certification of training must include: Employee's name, date of training, person conducting the training, topics covered, and a statement that the student has successfully completed the course. This list is not meant to be all inclusive: please refer to OSHA regulations for applicable safety requirements.

- a. Scaffold: 1926.454
- b. Fall Protection 1926.503
- c. Crane Operator: 1926.1427
- d. Signal person (this is for any persons connecting material or equipment for lifting):
1926.1428
- e. Crane maintenance: 1926.1429
- f. Steel erection fall protection: 1926.761
- g. Respiratory protection (medical clearance and training records complying with 1910.134
- h. Powder-actuated tools: 1926.302
- i. Motor Vehicles (are those vehicles that operate within an off-highway jobsite, not open to public traffic): 1926.21

CONTRACTOR

COMPETENT / QUALIFIED PERSON DESIGNATION LOG

Project:

Field Manager:

Contract: Contractor:	Applicable to Subcontractor (yes / no)		Foreman	Competent Person (if not foreman)
Subpart C-General Provisions				
1926-20 General Safety				
Subpart D - Health and Environmental Controls				
1926-53 Ionizing Radiation				
1926-55 Gases, Vapors, Fumes, Dusts, Mists				
1926-57 Ventilation				
1926.59 Hazard Communication				
1926.62 Lead				
Subpart E - Personal Protective Equipment				
1926.101 Hearing				
1926.103 Respirator Protection				
Subpart H - Materials Handling, Storage				
1926.251 Rigging Equipment for Material Handling				
Subpart J - Welding and Cutting				
1926.354 Welding, Cutting and Heating				
Subpart K - Electrical				
1926.404 Wiring Design and Protection				
Subpart L - Scaffolding				
1926.451 Scaffolding				
Subpart M - Fall Protection				
1926.502 Fall Protection Criteria and Practices				
1926.503 Training				
Subpart N - Cranes, Derrick -Redesignated 1926.1501				
Subpart O - Motor Vehicles and Equipment				
1926.601 Motor Vehicles				
Subpart P - Excavations				
1926.651 Specific Excavation Requirements				
1926.652 Requirements to Protective Systems				
Subpart S - Tunnels, Shafts, Caissons				
1926.800 Tunnels, Shafts, Caissons				
1926.803 Compressed Air				
Subpart T - Demolition				
1926.850 Preparatory Operations				
1926.852 Chutes				
1926.859 Mechanical Demolition				
Subpart V - Power Transmission and Distribution				
1926.955 Overhead Lines				

Contract: Contractor:	Applicable to Subcontractor (yes / no)		Foreman	Competent Person (if not foreman)
Subpart X - Stairways and Ladders				
1926.1053 Ladders				
1926.1060 Training Requirements				
Subpart Z - Toxic and Hazardous Substances				
1926.1101 Asbestos				
1926.1101 thru 1926.1148 Toxic and Hazardous Substances				

I certify that the listed employees are competent persons, as defined and required by specific OSHA standards. They are capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Name (print)

Contractor Signature

Date

SECTION 01 45 00 - QUALITY CONTROL

1. DESCRIPTION

1.1 Quality control services include inspections and tests performed by independent agencies and governing authorities, as well as by the Contractor. Inspection and testing services are intended to determine compliance of the work with requirements specified. Specific quality control requirements are specified in individual specification sections.

2. RESPONSIBILITIES

2.1 Contractor Responsibilities: Except where indicated as being the Owner's responsibility, quality control services are the Contractor's responsibility, including those specified to be performed by an independent agency and not by the Contractor. The Contractor shall employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified.

1. The Owner will engage and pay for services of an independent agency to perform the inspections and tests that are specified as Owner's responsibilities.

2.2 Retest Responsibility: Where results of inspections or test do not indicate compliance with Contract Documents, retests are the Contractor's responsibility.

2.3 Responsibility for Associated Services: The Contractor shall cooperate with independent agencies performing inspections or test. Provide auxiliary services as are reasonable. Auxiliary services include:

1. Provide access to the Work.
2. Assist taking samples.
3. Deliver samples to test laboratory.

2.4 Coordination: The Contractor and independent test agency shall coordinate the sequence of their activities and shall avoid removing and replacing work to accommodate inspections and test. The Contractor is responsible for scheduling time for inspections and tests.

2.5 Qualifications for Service Agencies: Contractor shall engage only inspection and test service agencies which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories.

2.6 Submittals: Contractor shall submit a certified written report of each test, Inspection

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or similar service, in duplicate to the Construction Manager. Contractor shall submit additional copies of each report to any governing authority, when the authority so directs.

2.7 Report Data: Written inspection or test reports shall include:

1. Name of testing agency or test laboratory.
2. Dates and locations of samples, tests or inspections.
3. Names of individual present.
4. Complete inspection of test data.
5. Test results.
6. Interpretations.
7. Recommendations.

2.8 Repair and Protection: Upon completion of inspection or testing, Contractor shall repair damaged work and restore substrates and finishes. Contractor shall comply with requirements for "Cutting and Patching."

2.9 The 2000 IBC code the following testing is code required:

1. Structural tests and special inspections must be conducted by an approved agency (an agency or firm regularly engaged in conducting tests or furnishing inspection services, approved by the authority having jurisdiction.) This means that contractors will no longer be allowed to cast their own test cylinders for example.
2. Continuous special inspection (the full-time observation of work by an approved special inspector who is present until completion of the work) is required for any steel welds and connections. Critical elements may include: all slip critical bolted connections, complete and partial groove welds, multi-pass fillet welds and single pass fillet welds greater than 5/16".
3. Continuous special inspection is required during the placement of all concrete and shotcrete for the proper application techniques with a few exceptions.
4. Periodic special inspection (the part-time observation by an approved special inspector) is required for any steel welds and connections. Critical elements may include: all slip critical bolted connections, complete and partial groove welds, multi-pass fillet welds and single pass fillet welds greater than 5/16".

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5. Spray applied fireproofing requires periodic special inspection for the structural member surface conditions, application, thickness, density and bond strength.
6. Based on the classification, occupancy, and design of the structure, the code requires periodic special inspection for placement of masonry units and reinforcing steel and continuous special inspection of grout placement.

END OF SECTION

SECTION 01 51 23 - TEMPORARY HEATING, COOLING AND VENTILATING

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

1. Temporary Electric: Section 01 51 13
2. Temporary Facilities: Section 01 52 00
3. Heating Requirements for Cold Weather Installation and Protection of Materials:
Respective specification section for each item of work.
4. Section 01511 Construction IAQ Management.

1.2 DEFINITIONS:

Temporary power to be provided by building contractor for his work.

END OF SECTION

SECTION 01 52 00 - CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

1. GENERAL

1.1 DESCRIPTION

1. Construction Manager and Contractors shall provide all temporary facilities throughout the construction period unless otherwise indicated in the Contract Documents.
2. Construction Manager and Contractors shall pay all costs for providing, maintaining and removing of all temporary facilities unless otherwise indicated in the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

1. Temporary Electric: Section 01 51 13.

2. FACILITIES

2.1 TEMPORARY SANITATION FACILITIES

1. Construction Manager will provide and maintain sanitary facilities for all personnel on the project.
2. The number of sanitary facilities required shall be based on the total number of workers employed on the site and shall be in accordance with the provisions of the applicable code.
3. Construction Manager will maintain sanitary facilities in a sanitary and clean condition at all times.

2.2 TEMPORARY WATER

1. Drinking Water: Contractor shall provide potable water for drinking purposes for all his personnel on the site. He shall furnish disposable drinking cups at water stations. Each water station shall be equipped with a suitable trash container for disposal of the drinking cups.
2. Construction Water: Construction Manager will provide and maintain tap locations for construction water of sufficiently pure and potable quality to avoid deleterious effect on any materials used. Location of construction water tap locations will be determined by the Construction Manager depending on the stage of construction of the incoming water service. Contractor shall provide and maintain all hoses, piping and valves as required for obtaining construction

water from taps provided by the Construction Manager.

2.3 TEMPORARY TELEPHONES

1. Construction Manager will not provide any telephones or fax machines for Contractor's personnel. Each Contractor is responsible for its own phones and fax machines.

2.4 FIELD OFFICE

1. During the period of the Work and until final acceptance of the project, the Construction Manager will provide a weatherproof building for the Construction Manager's Field Project Manager(s) and Superintendent(s). Contractor shall make provisions for its own field office, subject to approval by the Construction Manager.

2.5 FIRE PROTECTION

1. The Construction Manager will provide and maintain portable fire extinguishers on each floor level and building area. Number to conform to applicable codes.
2. Contractor shall provide additional fire extinguishers as required by OSHA regulations for its work.
3. Fire extinguishers shall be Multi-Purpose (ABC) dry chemical, UL labeled.

2.6 ACCESS ROADS AND PARKING AREAS

1. The Construction Manager will provide and maintain access roads on the site.
2. Neither the Construction Manager nor the Owner will provide parking for Contractor's personnel on or about the project site. All parking provisions required for Contractors will be solely the responsibility of the Contractors or their personnel.

2.7 STORAGE AREAS

1. The Construction Manager will assign storage areas on the site. Storage areas are extremely limited and will be assigned in a manner which will best facilitate the work.
2. Contractor shall provide all other storage space required for its work at off-site locations.
3. All combustible or flammable materials must be safely stored in a secured area

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in strict accordance with regulations, codes and laws enforced by local, State or Federal agencies, whichever is the most stringent.

2.8 FIRST AID STATION

1. The Construction Manager will provide and maintain an unmanned first aid station for all personnel in his jobsite office.

2.9 SECURITY

1. All safety and security measures shall be the responsibility of each Contractor. These measures shall include but are not limited to the provision of secured storage for tools, construction equipment, and materials and equipment scheduled for installation in the building.

2.10 BENCH MARKS AND BASELINE

1. The Construction Manager will lay out and establish and maintain bench marks and baselines.
2. The Contractor shall lay out his own work and shall be responsible for the accuracy of same.
3. Contractor shall check grades, lines, levels and dimensions as shown on the drawings and shall promptly report errors or inconsistencies in same to the Construction Manager before Work proceeds.
4. The Contractor is responsible for damaging or altering the bench marks and baselines established by the Construction Manager and shall bear the costs of replacing same.

2.11 FIELD OFFICE AND STORAGE TRAILERS

1. Contractor shall provide and maintain its own field office and storage trailers as required.
2. Contractor shall provide temporary heat and power for its field office and storage trailer.
3. Contractor's field offices and storage trailers shall be located as directed by the Construction Manager.

2.12 PROJECT SIGN

1. The Construction Manager will provide a Project Sign naming the major

participants, as determined by the Owner.

2.13 TRASH DISPOSAL

1. Each Contractor shall be responsible for clean up and depositing its common trash in the dumpsters provided by the Construction Manager.
2. The Construction Manager will not provide a trash chute.
3. The Construction Manager will provide dumpsters, and will arrange for disposal of common, non-hazardous, work-related trash deposited in these dumpsters.

2.14 HOISTING

1. Contractor shall provide its own materials hoists and cranes. No personnel hoist will be provided.

2.15 SCAFFOLDING AND WORKING PLATFORMS

1. No scaffolding shall be provided by the Construction Manager. Each Contractor shall provide all scaffolding required to perform its Work.

2.16 SAFETY BARRICADES AND RAILINGS

1. The Structural Contractor shall provide barricades around elevator, stair, shaft and cut openings in floors and roofs, and edges of floors and roofs. All barricades shall at a minimum, be constructed of two runs of 1/2" diameter wire rope cable with adequate turn-buckle and eyes such that no more than 60' of cable need be loosened or removed at any given location for access. All cables shall be installed such that no more than 3" of deflection of the cable is achieved at any point between supports. The methods and materials used in barricading shall be in accordance with OSHA and local code regulations, and shall be approved by the Construction Manager prior to installation. Barricades will be installed immediately after the installation of the floor slab on any level or part of a level on the Building. Until a level has been fully barricaded, the Structural Contractor will be responsible for maintenance of the barricades. After a level has been fully barricaded, the Construction Manager will assume maintenance of the barricades until a subsequent contractor requires the barricades to be removed in order to accomplish his work, at which time that contractor will assume maintenance of the barricades.
2. After the barricades are no longer needed, the Construction Manager will remove the barricades from the site. The Construction Manager will determine the location and scheduling of barriers to be removed.

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3. Contractor shall provide for its own barricades at all other trenches, excavations, and locations not specifically identified in Paragraph 1 above.
4. Contractors who remove barricades shall be responsible for replacing them. If, after proper notification, in writing, from the Construction Manager the responsible Contractor does not correct his deficiencies in safety barricade placement, the Construction Manager reserves the right to undertake this work and backcharge the responsible Contractor(s).
5. During the execution of his work, Contractor will provide daily maintenance of, and upon completion of same, restore all barricades in a manner acceptable to prevailing safety standards enforced by local, State or Federal ordinance, whichever is most stringent. The intent is to leave no floor penetration or perimeter opening in an unsafe condition.
6. The Construction Manager shall arrange for temporary ladders required for access to each of the floor levels after the completion of floor slab work, and until the final stairs are ready for use.

2.17 PUMPING AND DRAINAGE

1. Contractor shall provide its own pumping and drainage.
2. When an area is released by one Contractor to another, the Contractor releasing an area shall be responsible for leaving it in a drained condition. The incoming Contractor shall assume responsibility for drainage on the day that he is scheduled to start work in the area. If the incoming Contractor is late in starting work, he shall assume responsibility for pumping and drainage arising as a result.

2.18 TEMPORARY BUILDING ENCLOSURES

N/A

2.19 TEMPORARY POWER AND LIGHTING

1. Provide own power source if required.
2. Contractor shall provide its own additional temporary lighting of sufficient lighting levels to properly install his work.

2.20 TEMPORARY HEAT

1. To be provided by General Carpentry Contractor if required for his work.

2.21 PROTECTION OF ADJACENT MATERIALS

1. Contractor shall protect adjacent materials and finishes from damage as a result of its work.

2.22 CLEAN UP

1. Contractor shall arrange for clean up and removal of debris resulting from its operations, and shall dispose of debris in accordance with the provisions of Paragraph 2.13 above. Clean up shall be scheduled on a continual basis to ensure that building, grounds and public properties are maintained free from accumulations of waste materials and trash, but in any case not less than once a week.
2. The Contractor will ensure that all waste materials that are combustible or flammable will be removed from the building at the end of each work day. All trash considered to be edible by rodent will be disposed of in metal containers and removed by the end of the work day.
3. At completion of its Work, each Contractor shall remove waste materials, rubbish, tools, equipment, and clean up all exposed surfaces in preparation for final cleaning.
4. If, after notification in writing from the Construction Manager, the Contractor does not correct its deficiencies in housekeeping within twenty four (24) hours, the Construction Manager reserves the right to undertake the Work and to backcharge the Contractor.
5. Final clean up prior to Owner occupancy shall be arranged for by the Construction Manager.

2.23 DUST PROTECTION

1. Contractor shall erect and maintain dust proof protection whenever its operations will produce dust and dirt that might filter through the building into occupied or finished areas. Contractor shall be responsible for all cleaning required due to its failure to provide such dust protection.

2.24 PROTECTION OF EXISTING CONSTRUCTION

1. Contractor shall be responsible for all damage that it may cause to materials and equipment stored or installed by other Contractors.

2.25 OTHER

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1. Contractor shall provide any other Temporary Facilities and services that it requires and which are not specifically identified above.

3. PERMITS
 - 3.1 The Construction Manager will obtain the Building Permit. All other permits are to be obtained and paid for by the Contractor requiring them.

4. EXECUTION
 - 4.1 GENERAL
 1. Contractor shall install all temporary facilities in accordance with applicable codes.
 2. Contractor shall maintain temporary facilities for which it is responsible throughout the construction period.
 3. Contractor shall remove all temporary facilities for which it is responsible when they are no longer required or when the Construction Manager directs the removal of same.
 4. Contractor shall repair all damage to the Project Site caused by the installation of its temporary facilities.

END OF SECTION

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SECTION 01 62 00 - MATERIAL AND EQUIPMENT

1. GENERAL CONDITIONS

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate apply to the Work specified in this Section.
- 1.2 Where work is to be executed under Separate Prime Contracts, the provisions of this Section apply to each Contract.

2. REQUIREMENTS INCLUDED

- 2.1 All materials and equipment incorporated into the Work shall:
 1. be new;
 2. conform to applicable specifications and standards; and
 3. comply with size, make, type and quality specified, or as specifically approved in writing by the Architect.
- 2.2 Manufactured and Fabricated Products shall conform to the following requirements:
 1. Designed, fabricated and assembled in accord with the best engineering and shop practices.
 2. Manufactured like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 3. Two or more items of the same kind shall be identical, by the same manufacturer.
 4. Products shall be suitable for service conditions.
 5. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
- 2.3 Contractor shall not use materials or equipment for any purpose other than that for which it is designated or is specified.
- 2.4 Materials removed from existing structures shall not be reused in the completed work unless specifically indicated or specified.
- 2.5 For materials and equipment specifically indicated or specified to be reused in the

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Work:

1. Contractor shall use special care on removal, handling storage and reinstallation, to assure proper function in the completed Work.
2. Arrange for transportation, storage and handling of products which require off-site storage, restoration or renovation. Pay all costs for such work.

3. MANUFACTURER'S INSTRUCTIONS

3.1 When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Construction Manager.

1. Maintain one set of complete instructions at the job site during installation and until completion.

3.2 Contractor shall handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, Contractor shall consult with Construction Manager for further instructions.
2. Contractor shall perform work in accord with manufacturer's instructions. Contractor shall not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

4. TRANSPORTATION AND HANDLING

4.1 Contractor shall arrange deliveries of Products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.

1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
2. Contractor shall immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that Products are properly protected and undamaged.

4.2 Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

5. STORAGE AND PROTECTION

5.1 Contractor shall store Products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Contractor shall store Products subject to damage by the elements in weathertight enclosures.
2. Contractor shall maintain temperature and humidity within the ranges required by manufacture's instructions.

5.2 Exterior Storage

1. Contractor shall store fabricated Products above the ground, on blocking or skids, to prevent soiling or staining. Cover Products which are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
2. Contractor shall store loose granular materials in a well-drained area on soiled surfaces to prevent mixing with foreign matter.

5.3 Contractor shall arrange storage in a manner to provide easy access for inspection. Contractor shall make periodic inspections of stored Products to assure that Products are maintained under specified conditions, and free from damage or deterioration.

5.4 Contractor shall store flammable materials so as to prevent contact with flames and fire. Conform with manufacturer's recommendations and local laws. Pay particular attention to storage of:

1. Roof insulation.
2. Roofing materials, including solvents.
3. Paint materials.
4. Cleaning and other solvents.
5. Fuels.

5.5 Protection after Installation:

1. Contractor shall provide substantial coverings as necessary to protect installed Products from damage from traffic and subsequent construction operations. Remove when no longer needed.

6. SUBSTITUTIONS AND PRODUCT OPTIONS

6.1 Product List.

1. Within 30 days after Contract Date, Contractor shall submit to Construction Manager a complete list of major products proposed to be used, with the name of the manufacturer and the installing Contractor.

6.2 Contractor's Options.

1. For Products specified only by reference standard, Contractor shall select any Product meeting that standard.
2. For Products specified by naming several Products or manufacturers, Contractor shall select any one of the Products or manufacturers named which complies with the specifications.
3. For Products specified by naming one or more Products or manufacturers and "or equal", Bidders must, during the bidding period, submit a request for substitutions for any Product or manufacturer not specifically named. See provisions in Paragraph 1.6.3.
4. For Products specified by naming only one Product and manufacturer, there is no option; and Contractor shall provide the precise Product specified.

6.3 Substitutions.

1. Until a date no later than seven (7) days before the date Bids are due, Architect will consider written requests from bidders for substitution of Products. The contractor will submit any substitution requests to the Construction Manager for transmittal to the Architect. The architect will review requests and will notify Bidders in an Addendum if the requested substitution is acceptable.
2. Should the Bidder desire a substitution, it shall submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
 1. Comparison of the qualities of the proposed substitution with that specified.
 2. Changes required in other elements of the Work because of the substitution.
 3. Effect on the construction schedule.
 4. Cost data comparing the proposed substitution with the Product specified.

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5. Any required license fees or royalties.
 6. Availability of maintenance service, and source of replacement materials.
 3. Architect, in its sole discretion, shall be the judge of the acceptability of the proposed substitution.
 4. A request for a substitution constitutes a representation that Bidder:
 1. has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified;
 2. will provide the same warranties or bonds for the substitution as for the Product specified;
 3. will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects; and
 4. waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
- 6.4 Architect will review requests for substitutions with reasonable promptness, and notify Bidders, in writing, through the Construction Manager, of the decision to accept or reject the requested substitution. Any decision to accept a substitution must be confirmed in an Addendum issued during the bidding period in order to be valid. Oral approvals will not be binding.

END OF SECTION

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SECTION 01 71 23 - FIELD ENGINEERING

1. GENERAL PROVISIONS

1.1 The general provisions of the Contract, including the Conditions of the Contract, (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 The provisions of the section apply to all contracts.

2. SURVEY

2.1 The Owner has had a site survey prepared by Becker Morgan Group. This information has been included in this Bid Pac.

3. CONSTRUCTION MANAGER

3.1 The Construction Manager will establish a bench mark and base line from which structures and grades shall be laid out by Contractors as designated in this section. The total extent of this layout is shown on the site drawings. One bench elevation shall be provided.

END OF SECTION

SECTION 01 73 29 - CUTTING AND PATCHING

1. GENERAL

- 1.1 Definition: "Cutting and Patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.
- 1.2 Refer to Other Sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.
- 1.3 Structural Work: Do not cut and patch structural work in a manner resulting in a reduction of load carrying capacity or load deflection ratio. Submit proposal and request and obtain Architect's/Engineer's approval before proceeding with cut and patch of structural work.
- 1.4 Operational/Safety Limitations: Do not cut and patch operational elements and safety components in a manner resulting in decreased performance, shortened useful life, or increased maintenance. Submit proposals and requests and obtain Architect's/Engineer's approval before proceeding with cut and patches of structural work.
- 1.5 Visual/Quality Limitations: Do not cut and patch work exposed to view (exterior and interior) in manner resulting in noticeable reduction of aesthetic qualities and similar qualities, as judged by Architect/Engineer.
 1. Engage the original Installer/Fabricator, or (if not available) an acceptable equivalent entity, to cut and patch the following categories of exposed work but not limited to
 2. Exterior wall materials, ie., curtain wall
 3. Finish floor materials, ie., substrate, carpet, ceramic tile
 4. Walls
 5. Ceilings
- 1.6 Limitation on Approvals: Architect's/Engineer's approval to proceed with cutting and patching does not waive right to later acquire removal/replacement of work found to be cut and patched in an unsatisfactory manner, as judged by Architect/Engineer.

2. MATERIALS

- 2.1 General: Use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal or better

performance characteristics.

3. EXECUTION

- 3.1 Inspection: Before cutting, examine surfaces to be cut and patched and conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.
- 3.2 Temporary Support: To prevent failure provide temporary support of work to be cut.
- 3.3 Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.
1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
 2. Take precautions not to cut existing pipe, conduit or duct serving the building but scheduled to be relocated until provisions have been made to bypass them.
- 3.4 Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with original installer's recommendations.
1. Where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut and drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.
- 3.5 Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
1. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and finishing.

END OF SECTION

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous construction waste.
 - 2. Recycling nonhazardous construction waste.
 - 3. Disposing of nonhazardous construction waste.
- B. Related Requirements:
 - 1. Section 04 20 00 "Unit Masonry" for disposal requirements for masonry waste.
 - 2. Section 31 10 00 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.02 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.03 PERFORMANCE REQUIREMENTS

- A. General: Achieve minimum end-of-Project rates for salvage/recycling of 75 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
 - 1. Construction Waste:
 - a. Masonry and CMU.
 - b. Lumber.
 - c. Wood sheet materials.
 - d. Wood trim.
 - e. Metals.
 - f. Roofing.
 - g. Insulation.
 - h. Carpet and pad.
 - i. Gypsum board.
 - j. Piping.
 - k. Electrical conduit.

1. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Plastic pails.

1.04 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.05 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
 1. Material category.
 2. Generation point of waste.
 3. Total quantity of waste in tons.
 4. Quantity of waste salvaged, both estimated and actual in tons.
 5. Quantity of waste recycled, both estimated and actual in tons.
 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. LEED Submittal: LEED letter template for Credit MR 2, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- H. Qualification Data: For waste management coordinator and refrigerant recovery technician.
- I. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.06 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements, that employs a LEED-Accredited Professional, certified by the USGBC, as waste management coordinator.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.07 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Track and keep a summary log of all construction waste generated by type, the quantities of each type that were diverted and landfilled, and the total percentage of waste diverted from landfill disposal. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan. Plan shall, at a minimum, identify the diversion goals, relevant construction debris and materials to be diverted, implementation protocols, and parties responsible for implementing the plan.
- B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 1. Comply with operation, termination, and removal requirements in Section 01 50 00 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Section 01 50 00 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 RECYCLING CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 4. Store components off the ground and protect from the weather.
 5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.03 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials.
 - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

3.04 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION

SECTION 01 77 00 - CONTRACT CLOSE OUT

1. DESCRIPTION OF REQUIREMENTS

- 1.1 Provisions of this section apply to the procedural requirements for the actual close out of the Work, not to the administrative matters such as final payment or the change over of insurance. Close out requirements relate to both substantial and final completion of the Work; they also apply to individual portions of completed work as well as the Total work. Specific requirements contained in other sections have precedence over the general requirements contained in this section.
- 1.2 Closeout documents will be submitted through the Building Blok Management Program.

2. PROCEDURES AT SUBSTANTIAL COMPLETION

- 2.1 Prerequisites: Contractor shall comply with the General Conditions and complete the following before requesting inspection of the Work, or a designated portion of the Work, for certification of substantial completion:

1. submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates, releases of liens, tax certification and similar required documentation for specific units of work, and documents needed to enable Owner's unrestricted occupancy and use;
2. submit record documentation, maintenance manuals, tools, spare parts, keys and similar operational items;
3. complete instructions of Owner's operating personnel, and start up of systems; and
4. complete final cleaning and remove temporary facilities and tools.

- 2.2 Inspection Procedures: Upon receipt of Contractor's request, Architect/Engineer will either proceed with inspection or advise Construction Manger of prerequisites not fulfilled. Following initial inspection, Architect/Engineer will either prepare certificate of substantial completion, or advise Construction Manager of work which must be performed prior to issuance of certificate. The Architect/Engineer will repeat the inspection when requested and assure that the work has been substantially completed. Results of the completed inspection will form the initial "punch list" for final acceptance.

- 2.3 Punch List Procedures: Each Contractor shall be given a copy of the punch list with its appropriate work identified. Each Contractor shall be given 9 (nine) calendar

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work days to complete their punch list work. On the 10th day or as determined by the Construction Manager the Construction Manager shall employ other Contractors, as required, to complete any incomplete punch list work and retain from the appropriate Contractors retainage all costs incurred.

3. PROCEDURES AT FINAL ACCEPTANCE

3.1 Reinspection Procedure: The Architect/Engineer will reinspect the Work upon receipt of the Contractor's notice that, except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect/Engineer, the Work has been completed, including punch list items from earlier inspections. Upon completion of reinspection, the Architect/Engineer will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, this procedure will be repeated.

4. RECORD DOCUMENTATION

4.1 Record Drawings: Contractor shall maintain a complete set of either blue or black line prints of the contract documents and shop drawings for record mark up purposes throughout the Contract Time. Contractor shall mark up these drawings during the course of the Work to show both changes and the actual installation, in sufficient detail to form a complete record for Owner's purposes giving particular attention to work that will be concealed and difficult to measure and record at a later date, and Work which may require servicing or replacement during the life of the project. Require the entities marking prints to sign and date each mark up. Bind prints into manageable sets, with durable paper cover, appropriately labeled.

4.2 Maintenance Manual: Contractor shall provide 3-ring vinyl covered binders containing required maintenance manuals, properly identified and indexed and including operating and maintenance instructions extended to cover emergencies, spare parts, warranties, inspection procedures, diagrams, safety, security, and similar appropriate data for each system of equipment item.

4.3 State Tax Certification: Contractor shall provide recent Delaware State Tax Certification form as issued by State of Delaware, Department of Finance, Division of Revenue, Carvel State Office Building, 820 N. French Street, Wilmington, Delaware 19801.

5. GENERAL CLOSE OUT REQUIREMENTS

5.1 Operator Instruction: Contractor shall require each Installer of systems requiring continued operation and maintenance by Owner's operating personnel, to provide on location instruction to Owner's personnel, sufficient to ensure safe, secure, efficient,

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non-failing utilization and operation of systems. Contractor shall provide instructions for the following categories of work:

1. Mechanical/electrical/electronic systems (not limited to work of Division 15 and 16).
2. Roofing, flashing, joint sealers.
3. Floor finishes.

6. FINAL CLEANING

6.1 At the time of project close out Contractor shall clean or reclean the Work to the condition expected from a normal, commercial building cleaning and maintenance program. Complete the following cleaning operations before requesting the Architect/Engineer's inspection for certification of substantial completion:

1. Remove non-permanent protections and labels.
2. Polish glass.
3. Clean exposed finishes.
4. Touch up minor finish damage.
5. Clean or replace mechanical systems filters.
6. Remove debris.
7. Broom clean unoccupied spaces.
8. Sanitize plumbing and food service facilities.
9. Clean light fixtures and replace burned out lamps.
10. Sweep and wash paved areas.
11. Police yards and grounds.

END OF SECTION

SECTION 01 8113

SUSTAINABLE DESIGN REQUIREMENTS LEED FOR SCHOOLS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to pursue LEED Silver certification based on USGBC's "LEED 2009 for Schools New Construction and Major Renovations."
 - 1. Other LEED prerequisites and credits needed to obtain LEED certification depend on product selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.
 - 2. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification depend on Architect's design and other aspects of Project that are not part of the Work of the Contract.
 - 3. A copy of the LEED Project checklist is attached at the end of this Section for information only.
- B. Related Requirements:
 - 1. Divisions 01 through 49 Sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.

1.02 DEFINITIONS

- A. Agrifiber Board: A composite panel product derived from recovered agricultural waste fiber from sources such as cereal straw, sugarcane bagasse, sunflower husk, walnut shells, coconut husks, and agricultural prunings. The raw fibers are processed and mixed with resins to produce panel products with characteristics similar to those derived from wood fiber. The following conditions describe which products must comply with requirements:
 - 1. The product is inside the building's waterproofing system.
 - 2. Composite components used in assemblies are to be included (e.g., door cores, panel substrates).
 - 3. The product is part of the base building systems.
- B. Certified Wood:
 - 1. Chain-of-Custody (COC): A tracking procedure for a product from the point of harvest or extraction to its end use, including all successive stages of processing, transformation, manufacturing, and distribution.
 - 2. Chain-of-Custody Certification: Certification awarded to companies that produce, sell, promote, or trade forest products after audits verify proper accounting of material flows and proper use of the Forest Stewardship Council name and logo. The COC certificate number is listed on invoices for nonlabeled products to document that an entity has followed FSC guidelines for product accounting.
- C. Composite Wood: Wood or plant particles or fibers bonded together by a synthetic resin or binder. Examples include plywood, particleboard, oriented-strand board (OSB), medium-density fiberboard (MDF), and composite door cores. The following conditions describe which products must comply with the credit requirements:
 - 1. The product is inside the buildings waterproofing system.
 - 2. Composite wood components used in assemblies are included (e.g., door cores, panel substrates, plywood sections of I-beams).
 - 3. The product is part of the base building systems.

- D. Construction Indoor Air Quality Management Plan: A plan that outlines measures to minimize contamination in a specific Project building during construction and describes procedures to flush the building of contaminant prior to occupancy.
- E. Construction and Demolition Debris: Waste and recyclables generated from construction and from the renovation, demolition, or deconstruction of preexisting structures. It does not include land-clearing debris, such as soil, vegetation, and rocks.
- F. Contaminants: Unwanted airborne elements that may reduce air quality. (ASHRAE 62.1-2007)
- G. Indoor Air Quality (IAQ): The nature of air inside a building that affects the health and well-being of building occupants. It is considered acceptable when there are known contaminants at harmful concentrations as determined by cognizant authorities and with which a substantial majority (80% or more) of the people exposed do not express dissatisfaction. (ASHRAE 62.1-2004).
- H. Minimum Efficiency Reporting Value (MERV): A filter rating established by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE 52.2-1999, Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size). MERV categories range from 1 (very low efficiency) to 16 (very high).
- I. Rapidly Renewable Materials: Agricultural products, both fiber and animal, that take 10 years or less to grow or raise and can be harvested in a sustainable fashion.
- J. Recycled Content: The proportion, by mass, of preconsumer or postconsumer recycled material in a product (ISO 14021).
 - 1. Postconsumer Recycled Content: The percentage of material in a product that was consumer waste. The recycled material was generated by household, commercial, industrial, or institutional end-users and can no longer be used for its intended purpose. It includes returns of materials from the distribution chain (ISO 14021). Examples include construction and demolition debris, materials collected through recycling programs, discarded products (e.g., furniture, cabinetry, decking), and landscaping waste (e.g., leaves, grass clippings, tree trimmings).
 - 2. Preconsumer Recycled Content: Formerly known as “postindustrial content”, this is the percentage of material in a product that is recycled from manufacturing waste. Examples include planer shavings, sawdust, bagasse, walnut shells, culls, trimmed materials, overissue publications, and obsolete inventories. Excluded are rework, regrind, or scrap materials capable of being reclaimed within the same process that generated them (ISO 14021).
- K. Recycling: The collection, reprocessing, marketing, and use of materials that were diverted or recovered from the solid waste stream.
- L. Refurbished Materials: Products that could have been disposed of as solid waste. These products have completed their life cycle as consumer items and are then refurbished for reuse without substantial alteration of their form. Refurbishing includes renovating, repairing, restoring, or generally improving the appearance, performance, quality, functionality, or value of a product.
- M. Regional Materials:
 - 1. Regionally Extracted Materials: Raw materials taken from within a 500-mile radius of the Project Site.
 - 2. Regionally Manufactured Materials: Materials assembled as finished products within a 500-mile radius of the Project Site

3. Remanufactured Materials: Items that are made into other products. One example is concrete that is crushed and used as subbase.
- N. Reuse: The return of materials to active use in the same or a related capacity as their original use, thus extending the lifetime of materials that would otherwise be discarded.
- O. Salvaged Materials/Reused Materials: Construction materials recovered from existing buildings or construction sites and reused. Common salvaged materials include structural beams and posts, flooring, doors, cabinetry, brick, and decorative items.
- P. Urea-Formaldehyde: A combination of urea and formaldehyde that is used in some glues and may emit formaldehyde at room temperature.
- Q. Verification: The range of checks and tests carried out to determine whether components, subsystems, systems, and interfaces between systems operate in accordance with the Contract Documents.
- R. Volatile Organic Compounds (VOCs): Carbon compounds that participate in atmospheric photochemical reactions (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, and ammonium carbonate). The compounds vaporize at normal room temperatures.

1.03 REFERENCE STANDARDS

- A. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
 1. ASHRAE 52.2-1999: Method of Testing General Ventilation Air-Conditioning Devices for Removal Efficiency by Particle Size.
 2. ASHRAE 55: Thermal Environmental Conditions for Human Occupancy. Atlanta: ASHRAE, 2004.
 3. ASHRAE 62.1: Ventilation for Acceptable Indoor Air Quality, 2004.
 4. ASHRAE Guideline 1: The HVAC Commissioning Process, 1996.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers/Illuminating Engineering Society of North America (ASHRAE/IESNA):
 1. ASHRAE/IESNA 90.1: Energy Standard for Buildings except Low-Rise Residential Buildings. Atlanta/New York: ASHRAE/IESNA, 2004.
- C. California Department of Health Services:
 1. Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.
 - a. Available in PDF at www.cal-iaq.org/VOC/
- D. Carpet and Rug Institute; <http://www.carpet-rug.org/>:
 1. CRI 104-2002: Standard for Installation Specification of Commercial Carpet:
 - a. Green Label (testing program).
 - b. Green Label Plus (testing program).
- E. Code of Federal Regulations:
 1. 40 CFR 59, Subpart D-2001: National Volatile Organic Compound Emission Standard for Architectural Coatings.
- F. Efficiency Valuation Organization (P.O. Box 23363, Washington, DC 20026-3363):
 1. International Performance Measurement and Verification Protocol (IPMVP), Volume III: Concepts and Options for Determining Energy Savings in New Construction, 2003.
 - a. Available in PDF at www.ipmvp.org.
- G. Environmental Protection Agency:

1. Compendium of Methods for the Determination of Air Pollutants in Indoor Air. April 1990.
 2. Document No. 832R92005: Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices. Washington, DC: EPA, 1992. Available from Department of Commerce, National Technical Information Service, www.ntis.gov; Ch. 3 is available in PDF at www.epa.gov/npdes/pubs/chap03_conguide.pdf
 3. Document No. 840R92002: Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. 1993. (Available from Department of Commerce, National Technical Information Service, www.ntis.gov)
- H. Environmental Protection Agency:
1. FSC STD-01-001-2004: FSC Principals and Criteria for Stewardship; available in PDF at www.fsc.org.
- I. Green Seal; <http://www.greenseal.org>:
1. Green Seal GC-03: Green Seal Environmental Standard for Anti-Corrosive Paints, 2nd Edition, January 7, 1997.
 2. Green Seal GS-11: Green Seal Environmental Standard for Paints and Coatings, 1st Edition, May 20, 1993.
 3. Green Seal GS-36: Green Seal Environmental Standard for Commercial Adhesives, 1st Edition, October 9, 2000.
- J. Public Technology Institute/U.S. Green Building Council:
1. Sustainable Building Technical Manual - Green Building Design, Construction, and Operation. Washington, DC: PTI/USGBC, 1996. (1301 Pennsylvania Ave. NW, Washington, DC 20004; 202-626-2412; available to members of the USGBC in PDF at www.usgbc.org)
- K. Resilient Floor Covering Institute; <http://www.rfci.com>:
1. FloorScore Program; http://www.rfci.com/int_FloorScore.htm.
- L. Sheet Metal and Air Conditioning Contractors' National Association:
1. SMACNA IAQ Guideline for Occupied Buildings under Construction. 1995.
- M. South Coast Air Quality Management District; <http://www.aqmd.gov/>:
1. Rule 1113 - Architectural Coatings.
 2. Rule 1168 - Adhesive and Sealant Applications.
- N. U.S. Green Building Council; <http://www.usgbc.org/>:
1. LEED Reference Guide for Green Building Design and Construction, Schools 2009 Edition .

1.04 ADMINISRATIVE SUBMITTALS

- A. Respond to questions and requests from Architect, LEED requirements coordinator (Project LEED AP), and the USGBC regarding LEED credits that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures until the USGBC has made its determination on the project's LEED certification application. Document responses as informational submittals.

1.05 ACTION SUBMITTALS

- A. General: Submit additional LEED submittals required by other Specification Sections.

- B. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.
- C. LEED Documentation Submittals:
 - 1. Credit EA 5 “Measurement and Verification”: Product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy-consumption performance over a period of time of not less than one year of postconstruction occupancy.
 - a. Credit MR 2 “Construction Waste Management”: Comply with Section 01 74 19 "Construction Waste Management and Disposal."
 - b. Credit MR 4 “Recycled Content”:
 - 1) List of product names, manufacturers' names, costs, percentage postconsumer content, and percentage preconsumer content.
 - 2) Cutsheets or manufacturer's letters to document the listed products' recycled content.
 - 3) List of actual materials costs, excluding labor and equipment, for CSI MasterFormat 2004 Edition Divisions 02-10 only.
 - c. Credit MR 5 “Regional Materials”:
 - 1) List of product purchases manufactured, extracted, or harvested regionally.
 - 2) List of manufacturers' names, product costs, distances between the Project and manufacturer, and distances between the Project and the extraction site.
 - 3) Cutsheets that document material origin and manufacture within a 500-mile radius of the Project Site.
 - 4) List of actual materials costs, excluding labor and equipment, for CSI MasterFormat 2004 Edition Divisions 02-10 only.
 - d. Credit MR 6 “Rapidly Renewable Materials”:
 - 1) List of rapidly renewable product purchases.
 - 2) List of manufacturers' names, materials costs, the percentage of each product that is rapidly renewable criteria (by weight), and each compliant value.
 - 3) Cutsheets that document rapidly renewable criteria.
 - 4) List of actual materials costs, excluding labor and equipment, for CSI MasterFormat 2004 Edition Divisions 02-10 only.
 - e. Credit MR 7 “Certified Wood”: Product data and chain-of-custody (COC) certificates for products containing wood-based materials and products that are certified in accordance with the Forest Stewardship Council's (FSC's) principles and criteria and that are permanently installed in the Project.
 - 1) Each wood product must be identified on a line item basis.
 - 2) FSC products must be identified as such on a line item basis.
 - 3) The dollar value of each line item must be shown.
 - 4) Vendor invoices for each certified wood product. The vendor's COC certificate number must be shown on any invoice that includes FSC certified products.
 - 5) Include statement indicating cost for each certified wood product.
 - f. Credit EQ 3.1 “Construction Indoor Air Quality Plan - During Construction”:
 - 1) Construction indoor-air-quality management plan.
 - 2) Product data for temporary filtration media, including MERV rating.
 - 3) Product data for filtration media used during occupancy, including MERV rating.

- 4) Construction Documentation: Six photographs at three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the indoor-air-quality management measures, such as protection of ducts and on-site stored or installed absorptive materials.
- g. Credit IEQ 3.2 “Construction Indoor Air Quality Plan - Before Occupancy”:
 - 1) Submit a written construction indoor-air-quality management plan
 - 2) If Air Flush Out:
 - (a) Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed, occupancy, outdoor air delivery rates, internal temperature, and humidity as well as any special considerations. Also include a statement that filtration media was replaced after flush-out.
 - (b) Product data for filtration media used during flush-out and during occupancy.
 - 3) If Air Testing:
 - (a) Report from testing and inspecting agency indicating results of indoor-air-quality testing and documentation verifying that all required contaminants are accounted for and reported in the correct unit of measure.
- h. Credit IEQ 4.1 “Low-Emitting Materials - Adhesives & Sealants”:

Submit a list of each indoor adhesive product, sealant, and sealant primer used on the interior of the building (i.e., inside of the weatherproofing system and applied on-site).

 - 1) Include manufacturer's name, product name, and specific VOC data (g/L, less water) for each product, as well as corresponding allowable VOC from the referenced standard.
 - 2) Submit laboratory test reports and other required documentation for each adhesive and sealant installed in the building interior that it meets the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
- i. Credit IEQ 4.2 “Low-Emitting Materials - Paints & Coatings”:

Submit a list of each paint and coating used on the interior of the building (i.e., inside of the weatherproofing system and applied on-site).

 - 1) Include manufacturer's name, product name, and specific VOC data (g/L, less water) for each product, as well as corresponding allowable VOC from the referenced standard.
 - 2) Submit laboratory test reports and other required documentation for each paint and coating installed in the building interior that it meets the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
- j. Credit IEQ 4.3 “Low-Emitting Materials - Flooring Systems”:
 - 1) Submit a list of each carpet, carpet cushion, and carpet adhesive installed in the building interior. Include manufacturer's name and product name. Record the VOC content for each adhesive.
 - 2) Submit a list of each hard surface flooring product, tile setting adhesive, finishes, and grout installed in the building interior. Record the VOC content for each tile setting adhesive and grout.

- 3) Submit laboratory test reports and other required documentation for each flooring element installed in the building interior that it meets the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
- k. Credit IEQ 4.4 "Low-Emitting Materials - Composite Wood & Agrifiber Products":
 - 1) Submit a list of each composite wood and agrifiber product installed in the building interior.
 - 2) Submit product data for each product containing composite wood or agrifiber products or wood glues indicating that each product contains no added urea-formaldehyde resins.
 - 3) Submit product data for each laminating adhesive used to fabricate on-site and shop-applied composite wood and agrifiber assemblies indicating that each does not contain added urea-formaldehyde resins.
 - 4) Submit laboratory test reports and other required documentation for each composite wood and agrifiber product installed in the building interior that it meets the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
- l. Credit IEQ 4.5 "Low-Emitting Materials - Furniture and Furnishings":
 - 1) Submit a list of each Classroom furniture including all student desks, tables, and seats that was manufactured, refurbished or refinished within 1 year prior to occupancy. Salvaged and used furniture that is more than 1 year old at time of the occupancy is excluded from the credit requirements. Include manufacturer's name and product name.
 - 2) Submit required documentation for each furniture element to meet either option 1, 2 or 3.
- m. Credit IEQ 4.6 "Low-Emitting Materials - Ceiling and Wall Systems":
 - 1) Submit a list of all gypsum board, insulation, acoustical ceiling systems and wall coverings installed in the building interior (defined as, inside the weatherproofing system and applied on-site). Include manufacturer's name and product name.
 - 2) Submit laboratory test reports and other required documentation for each product that it meets the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For LEED coordinator.
- B. Project Materials Cost Data: Provide statement indicating total cost for materials used for Project. Costs exclude labor, overhead, and profit. Include breakout of costs for the following categories of items:
 1. Furniture.
 2. Plumbing.
 3. Mechanical.
 4. Electrical.

5. Specialty items such as elevators and equipment.
 6. Wood-based construction materials.
- C. LEED Action Plans: Provide preliminary submittals within 30 days of date established for the Notice to Proceed indicating how the following requirements will be met:
1. Credit MR 2 “Construction Waste Management”: Waste management plan complying with Section 01 74 19 "Construction Waste Management and Disposal."
 2. Credit MR 4 “Recycled Content”: List of proposed materials with recycled content. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.
 3. Credit MR 5 “Regional Materials”: List of proposed regional materials. Identify each regional material, including its source, cost, and the fraction by weight that is considered regional.
 4. Credit MR 6 “Rapidly Renewable Materials”: List of proposed rapidly renewable materials. Identify each rapidly renewable material, including its source, cost, and the percentage of each product that is rapidly renewable criteria (by weight), and each compliant value.
 5. Credit MR 7 “Certified Wood”: List of proposed certified wood products. Indicate each product containing certified wood, including its source and cost of certified wood products.
 6. Credit IEQ 3.1 “Construction Indoor Air Quality Plan - During Construction”: Construction indoor-air-quality management plan.
- D. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:
1. Credit MR 2 “Construction Waste Management”: Waste reduction progress reports complying with Section 01 74 19 "Construction Waste Management and Disposal."
 2. Credit MR 4 “Recycled Content”: Recycled content.
 3. Credit MR 5 “Regional Materials”: Regional materials.
 4. Credit MR 6 “Rapidly Renewable Materials”: Rapidly renewable materials.
 5. Credit MR 7 “Certified Wood”: Certified wood products.

1.07 QUALITY ASSURANCE

- A. LEED Coordinator: Engage an experienced LEED-Accredited Professional to coordinate LEED requirements. LEED coordinator may also serve as waste management coordinator.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Provide products and procedures necessary to obtain LEED credits required in this Section. Although other Sections may specify some requirements that contribute to LEED credits, the Contractor shall determine additional materials and procedures necessary to obtain LEED credits indicated.

2.02 RECYCLED CONTENT OF MATERIALS

- A. Credit MR 4 “Recycled Content”: Building materials shall have recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content for Project constitutes a minimum of 20 percent of cost of materials used for Project.
1. Cost of post-consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content plus

one-half of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.

2. Do not include plumbing, mechanical and electrical components, and specialty items such as elevators and equipment in the calculation. Furniture may be included if it is included consistently in MR credits 3-7.

2.03 REGIONAL MATERIALS

- A. Credit MR 5 “Regional Materials”: Not less than 20 percent of building materials (by cost) shall be regional materials.
 1. If only a fraction of a product or material is extracted, harvested, or recovered and manufactured locally, then only that percentage (by weight) must contribute to the regional value.
 2. Do not include plumbing, mechanical and electrical components, and specialty items such as elevators and equipment in the calculation. Furniture may be included if it is included consistently in MR credits 3-7.

2.04 RAPIDLY RENEWABLE MATERIALS

- A. Credit MR 6 “Rapidly Renewable Materials”: Not less than 2.5 percent of the total value of all building materials and products used in the Project, based on cost, shall be rapidly renewable materials.
 1. Furniture may be included if it is included consistently in MR credits 3-7.

2.05 CERTIFIED WOOD

- A. Credit MR 7 “Certified Wood”: Not less than 50 percent (by cost) of wood-based materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
 1. Include only materials permanently installed in the project. Wood Products purchased for temporary use on the project may be included at the project team's discretion. If any such materials are included, all such materials must be included.
 2. Furniture may be included if it is included consistently in MR credits 3-7.
 3. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:
 - a. Rough carpentry.
 - b. Miscellaneous carpentry.
 - c. Heavy timber construction.
 - d. Wood decking.
 - e. Metal-plate-connected wood trusses.
 - f. Structural glued-laminated timber.
 - g. Finish carpentry.
 - h. Architectural woodwork.
 - i. Wood paneling.
 - j. Wood veneer wall covering.
 - k. Wood flooring.
 - l. Wood lockers.
 - m. Wood cabinets.
 - n. Furniture.

2.06 LOW-EMITTING MATERIALS

- A. Credit IEQ 4.1 “Low-Emitting Materials - Adhesives & Sealants”: All adhesives and sealants installed in the building interior (defined as, inside the weatherproofing system and applied

- on-site) must meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
1. School projects may chose from IEQ credits 4.1-4.6 for a maximum of 4 points.
- B. Credit IEQ 4.2 “Low-Emitting Materials - Paints & Coatings”: All paints and coatings installed in the building interior (defined as, inside the weatherproofing system and applied on-site) must meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
1. School projects may chose from IEQ credits 4.1-4.6 for a maximum of 4 points.
- C. Credit IEQ 4.3 “Low-Emitting Materials - Flooring Systems”: All flooring elements installed in the building interior (defined as, inside the weatherproofing system and applied on-site) must meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
1. School projects may chose from IEQ credits 4.1-4.6 for a maximum of 4 points.
- D. Credit IEQ 4.4 “Low-Emitting Materials - Composite Wood & Agrifiber Products”: All composite wood and agrifiber products installed in the building interior (defined as, inside the weatherproofing system and applied on-site) must meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
1. School projects may chose from IEQ credits 4.1-4.6 for a maximum of 4 points.
- E. Credit IEQ 4.5 “Low-Emitting Materials - Furniture and Furnishings”: Classroom furniture including all student desks, tables and seats that was manufactured, refurbished or refinished within 1 year prior to occupancy must meet 1 of the following requirements. Salvaged and used furniture that is more than 1 year old at the time of the occupancy is excluded from the credit requirements.
1. Option 1: Furniture and seating must be GREENGUARD Children and Schools certified.
 2. Option 2: Calculated indoor air concentrations that are less than or equal to those listed in the following table for furniture systems and seating determined by a procedure based on the EPA Environmental Technology Verification (ETV) Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes (September 1999) testing protocol conducted in an independent air quality testing laboratory.

Chemical Contaminant	Classroom Furniture	Seating
Total VOC's	0.5 mg/m ³	0.25 mg/m ³
Formaldehyde	50 parts per billion	25 parts per billion
Total aldehydes	100 parts per billion	50 parts per billion
4-Phenylcyclohexene (4-PCH)	0.0065 mg/m ³	0.00325 mg/m ³

3. Option 3: Calculated indoor air concentrations that are less than or equal to those established in table above for furniture systems and seating determined by a protocol based on ANSI/BIFMA M7.1-2007 and ANSI/BIFMA X7.1-2007 testing protocol conducted in an independent third-party quality testing laboratory.
4. School projects may chose from IEQ credits 4.1-4.6 for a maximum of 4 points.

- F. Credit IEQ 4.6 “Low-Emitting Materials - Ceiling and Wall Systems”: All gypsum board, insulation, acoustical ceiling systems and wall coverings installed in the building interior (defined as, inside the weatherproofing system and applied on-site) must meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," including 2004 Addenda.
1. School projects may chose from IEQ credits 4.1-4.6 for a maximum of 4 points.

PART 3 - PRODUCTS

3.01 MEASUREMENT AND VERIFICATION

- A. Credit EA 5 “Measurement and Verification”: Implement measurement and verification plan consistent with either Option B: Energy Conservation Measure Isolation or Option D: Calibrated Simulation, Savings Estimation Method 2 in the EVO's "International Performance Measurement and Verification Protocol (IPMVP), Volume III: Concepts and Options for Determining Energy Savings in New Construction."
- B. If not already in place, install metering equipment to measure energy usage. Monitor, record, and trend log measurements.
- C. Evaluate energy performance and efficiency by comparing actual to predicted performance.
- D. Measurement and verification period shall cover at least one year of postconstruction occupancy.

3.02 CONSTRUCTION WASTE MANAGEMENT

- A. Credit MR 2 "Construction Waste Management": Comply with Section 01 74 19 "Construction Waste Management and Disposal."

3.03 CONSTRUCTION INDOOR-AIR-QUALITY MANGEMENT

- A. Credit IEQ 3.1 “Construction Indoor Air Quality Management Plan - During Construction”: Develop and implement an IAQ management plan for the construction and preoccupancy phases of the building as follows:
1. During construction, meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines For Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
 2. Protect stored on-site and installed absorptive materials from moisture damage.
 3. If permanently installed air handlers are used during construction period as specified in Section 01 50 00 "Temporary Facilities and Controls," filtration media with a minimum efficiency reporting value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE Standard 52.2-1999 (with errata but without addenda). Replace all filtration media immediately prior to occupancy.
 4. Prohibit smoking inside the building and within 25 feet of building entrances once the building is enclosed.
- B. Credit IEQ 3.2 “Construction Indoor Air Quality Management Plan - Before Occupancy”: Develop an IAQ management plan and implement it after all finishes have been installed and the building has been completely cleaned before occupancy. Comply with one of the following requirements:
1. Flush-Out:
 - a. After construction ends, prior to occupancy and with all interior finishes installed, install new filtration media and perform a building flush-out by supplying a total

volume of 14,000 cu. ft. of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60 deg F and a relative humidity no higher than 60 percent.

- b. If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cubic feet of outdoor air per square foot of floor area. Once the space is occupied, it must be ventilated at a minimum rate of 0.30 cubic feet per minute (cfm) per square foot of outside air or the design minimum outside air rate determined in Prerequisite EQ 1 “Minimum Air Quality Performance”, whichever is greater. During each day of the flush-out period, ventilation must begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions must be maintained until a total of 14,000 cubic feet per square foot of outside air has been delivered to the space.
2. Air Testing:
- a. Conduct baseline indoor-air-quality testing, after construction ends and prior to occupancy, using testing protocols consistent with the EPA's "Compendium of Methods for the Determination of Air Pollutants in Indoor Air," and as additionally detailed in the USGBC's "Green Building Design and Construction Reference Guide, 2009 Edition."
 - b. Demonstrate that the contaminant maximum concentrations listed below are not exceeded:

Contaminant	Maximum Concentration
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
Formaldehyde	27 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
4-Phenylcyclohexene (4-PH)*	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 parts per million and no greater than 2 parts per million above outdoor levels
* This test is required only if carpets and fabrics with styrene butadiene rubber (SBR) latex backing are installed as part of the base building systems.	

- c. For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the noncompliant concentrations. Repeat until all requirements are met. When retesting noncompliant building areas, take samples from same locations as in the first test, although it is not required.
- d. Conduct the air-sample testing as follows:
 - 1) All measurements shall be conducted prior to occupancy, but during normal occupied hours with the building ventilation system started at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the test.
 - 2) All interior finishes must be installed, including, but not limited to, millwork, doors, paint, carpet, and acoustic tiles. Movable furnishings such as workstations and partitions should be in place for the testing, although it is not required.
 - 3) The number of sampling locations will depend on the size of building and number of ventilation systems. For each portion of the building served by a

- separate ventilation system, the number of sampling points shall not be less than one per 25,000 square feet or for each contiguous floor area, whichever is larger. Include areas with the least ventilation and greatest presumed source strength.
- 4) Air samples must be collected between 3 and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum four-hour period.

END OF SECTION

SECTION 01 9113
GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes general requirements that apply to implementation of commissioning without regard to systems, subsystems, and equipment being commissioned.

1.02 RELATED SECTIONS

- A. Division 01 Section "HVAC Commissioning Requirements" for specific requirements for commissioning HVAC systems.
- B. Division 01 Section "Electrical Commissioning Requirements" for specific requirements for commissioning electrical systems.
- C. Division 01 Section "Plumbing System Commissioning Requirements" for specific requirements for commissioning Plumbing systems.
- D. Division 01 Section "Contract Closeout" for specific requirements for closeout at substantial and final completion.
- E. Division 01 Section "Contract Closeout" for Specific Requirements for training and demonstration of systems to Owner.
- F. Division 01 Section "Contract Closeout" for Specific Requirements related to the
 - 1. Preparation of systems operation and maintenance manuals.

1.03 DEFINITIONS

- A. CxA: Commissioning Authority.
- B. OPR: Owner's Project Requirements.
- C. Systems, Subsystems, and Equipment: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, and equipment.
- D. TAB: Testing, Adjusting, and Balancing.

1.04 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s): Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by Owner:
 - 1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract. The CxA for this project shall be performed by EMO Energy Solution, 3141 Fairview Park Drive, Suite 450, Falls Church, Virginia 22042, (703) 205-0445-telephone, (703) 205-0449-fax.
 - 2. Representatives of the facility user and operation and maintenance personnel.
 - 3. Architect and engineering design professionals.

1.05 OWNER'S RESPONSIBILITIES

- A. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities including, but not limited to, the following:
 - 1. Coordination meetings.

2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Testing meetings.
4. Demonstration of operation of systems, subsystems, and equipment.

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Provide utility services required for the commissioning process.
- B. Contractor shall assign representatives with expertise and authority to act on behalf of the Contractor and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
 1. Participate in commissioning and construction-phase coordination meetings.
 2. Participate in maintenance orientation and inspection.
 3. Participate in operation and maintenance training sessions.
 4. Participate in final review at acceptance meeting.
 5. Certify that Work is complete and systems are operational according to the Contract Documents, including calibration of instrumentation and controls.
 6. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 7. Review and approve final commissioning documentation.
 8. Certify that all pre-test work is complete and operational prior to scheduling performed testing by CxA.
- C. Subcontractors shall assign representatives with expertise and authority to act on behalf of subcontractors and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
 1. Participate in commissioning and construction-phase coordination meetings.
 2. Participate in maintenance orientation and inspection.
 3. Participate in procedures meeting for testing.
 4. Participate in final review at acceptance meeting.
 5. Provide schedule for operation and maintenance data submittals, equipment startup, and testing to CxA for incorporation into the commissioning plan. Update schedule on a weekly basis throughout the construction period.
 6. Provide information to the CxA for developing construction-phase commissioning plan.
 7. Participate in training sessions for Owner's operation and maintenance personnel.
 8. Provide updated Project Record Documents to the CxA on a daily basis.
 9. Gather and submit operation and maintenance data for systems, subsystems, and equipment to the CxA, as specified in Division 01 Section "Operation and Maintenance Data."
 10. Provide technicians who are familiar with the construction and operation of installed systems and who shall develop specific test procedures and participate in testing of installed systems, subsystems, and equipment.

1.07 CXA'S RESPONSIBILITIES

- A. Organize and lead the commissioning team.
- B. Prepare a construction-phase commissioning plan. Collaborate with Contractor and with subcontractors to develop test and inspection procedures. Include design changes and scheduled commissioning activities coordinated with overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.

- C. Convene commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying participants. The CxA shall prepare and distribute minutes to commissioning team members and attendees within five workdays of the commissioning meeting.
- D. At a mutually agreed upon time, conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals; operation and maintenance training sessions; TAB Work; and Project completion.
- E. Observe and inspect construction and report progress and deficiencies. In addition to compliance with the Contract Documents, inspect systems and equipment installation for adequate accessibility for maintenance and component replacement or repair.
- F. Prepare Project-specific test and inspection procedures and checklists.
- G. Schedule, direct, witness, and document tests, inspections, and systems startup.
- H. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
- I. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- J. Review Project Record Documents for accuracy. Request revisions from Contractor to achieve accuracy. Project Record Documents requirements are specified in Division 01 Section "Project Record Documents."
- K. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the Contract Documents. Operation and maintenance documentation requirements are specified in Division 01 Section "Operation and Maintenance Data."
- L. Assemble the final commissioning documentation, including the commissioning report and Project Record Documents.

1.08 COMMISSIONING DOCUMENTATION

- A. Commissioning Plan: A document, prepared by CxA, that outlines the schedule, allocation of resources, and documentation requirements of the commissioning process, and shall include, but is not limited to the following:
 - 1. Plan for delivery and review of submittals, systems manuals, and other documents and reports. Identification of the relationship of these documents to other functions and a detailed description of submittals that are required to support the commissioning processes. Submittal dates shall include the latest date approved submittals must be received without adversely affecting commissioning plan.
 - 2. Description of the organization, layout, and content of commissioning documentation (including systems manual) and a detailed description of documents to be provided along with identification of responsible parties.
 - 3. Identification of systems and equipment to be commissioned.
 - 4. Description of schedules for testing procedures along with identification of parties involved in performing and verifying tests.
 - 5. Identification of items that must be completed before the next operation can proceed.
 - 6. Description of responsibilities of commissioning team members.
 - 7. Description of observations to be made.

8. Description of requirements for operation and maintenance training, including required training materials.
 9. Description of expected performance for systems, subsystems, equipment, and controls.
 10. Schedule for commissioning activities with specific dates coordinated with overall construction schedule.
 11. Identification of installed systems, subsystems, and equipment, including design changes that occurred during the construction phase.
 12. Process and schedule for documenting changes on a continuous basis to appear in Project Record Documents.
 13. Process and schedule for completing prestart and startup checklists for systems, subsystems, and equipment to be verified and tested.
 14. Step-by-step procedures for testing systems, subsystems, and equipment with descriptions for methods of verifying relevant data, recording the results obtained, and listing parties involved in performing and verifying tests.
- B. Test Checklists: CxA, with assistance of Contractor and Subcontractors, shall develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. Prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Provide space for testing personnel to sign off on each checklist. Specific checklist content requirements are specified in Division 01 Section "HVAC Commissioning Requirements", "Electrical Commissioning Requirements" and "Plumbing System Commissioning Requirements." Test checklists will be jointly developed as the project progresses. Each checklist, regardless of system, subsystem, or equipment being tested, shall include, but not be limited to, the following:
1. Name and identification code of tested item.
 2. Test number.
 3. Time and date of test.
 4. Indication of whether the record is for a first test or retest following correction of a problem or issue.
 5. Dated signatures of the person performing test and of the witness, if applicable.
 6. Individuals present for test.
 7. Deficiencies.
 8. Issue number, if any, generated as the result of test.
- C. Certificate of Readiness: Certificate of Readiness shall be signed by Contractor, Subcontractor(s), Installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing. Completed test checklists signed by the responsible parties shall accompany this certificate.
- D. Test and Inspection Reports: CxA shall record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application shall be included with data. CxA shall compile test and inspection reports and test and inspection certificates and include them in systems manual and commissioning report.
- E. Corrective Action Documents: CxA shall document corrective action taken for systems and equipment that fail tests. Include required modifications to systems and equipment and revisions to test procedures, if any. Retest systems and equipment requiring corrective action and document retest results.

- F. Issues Log: CxA shall prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the Contract Documents. Identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.
1. Creating an Issues Log Entry:
 - a. Identify the issue with unique numeric or alphanumeric identifier by which the issue may be tracked.
 - b. Assign a descriptive title of the issue.
 - c. Identify date and time of the issue.
 - d. Identify test number of test being performed at the time of the observation, if applicable, for cross-reference.
 - e. Identify system, subsystem, and equipment to which the issue applies.
 - f. Identify location of system, subsystem, and equipment.
 - g. Include information that may be helpful in diagnosing or evaluating the issue.
 - h. Note recommended corrective action.
 - i. Identify commissioning team member responsible for corrective action.
 - j. Identify expected date of correction.
 - k. Identify person documenting the issue.
 2. Documenting Issue Resolution:
 - a. Log date correction is completed or the issue is resolved.
 - b. Describe corrective action or resolution taken. Include description of diagnostic steps taken to determine root cause of the issue, if any.
 - c. Identify changes to the Contract Documents that may require action.
 - d. State that correction was completed and system, subsystem, and equipment is ready for retest, if applicable.
 - e. Identify person(s) who corrected or resolved the issue.
 - f. Identify person(s) documenting the issue resolution.
 3. Issues Log Report: On a periodic basis, but not less than for each commissioning team meeting, CxA shall prepare a written narrative for review of outstanding issues and a status update of the issues log. As a minimum, CxA shall include the following information in the issues log and expand it in the narrative:
 - a. Issue number and title.
 - b. Date of the identification of the issue.
 - c. Name of the commissioning team member assigned responsibility for resolution.
 - d. Expected date of correction.
- G. Commissioning Report: CxA shall document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report shall indicate whether systems, subsystems, and equipment have been completed and are performing according to the Contract Documents. The commissioning report shall include, but is not limited to, the following:
1. Lists and explanations of substitutions; compromises; variances in the Contract Documents; record of conditions; and, if appropriate, recommendations for resolution. This report shall be used to evaluate systems, subsystems, and equipment and shall serve as a future reference document during Owner occupancy and operation. It shall describe components and performance that exceed requirements of the Contract Documents and those that do not meet requirements of the Contract Documents. It may also include a recommendation for accepting or rejecting systems, subsystems, and equipment.
 2. Commissioning plan.
 3. Testing plans and reports.

4. Corrective modification documentation.
 5. Issues log.
 6. Completed test checklists.
 7. Listing of off-season test(s) not performed and a schedule for their completion.
- H. Systems Manual: CxA shall gather required information and compile systems manual. Systems manual shall include, but is not limited to, the following:
1. Project Record Documents as specified in Division 01 Section "Project Record Documents."
 2. Final commissioning plan.
 3. Commissioning report.
 4. Operation and maintenance data as specified in Division 01 Section "Operation and Maintenance Data."

1.09 SUBMITTALS

- A. Test Checklists and Report Forms: CxA shall submit sample checklists and forms to Contractor quality-control manager and subcontractors for review and comment. Submit two copies of each checklist and report form.
- B. Test and Inspection Reports: CxA shall submit test and inspection reports.
- C. Corrective Action Documents: CxA shall submit corrective action documents.

1.10 QUALITY ASSURANCE

- A. Instructor Qualifications: Factory-authorized service representatives, experienced in training, operation, and maintenance procedures for installed systems, subsystems, and equipment.
- B. Test Equipment Calibration: Comply with test equipment manufacturer's calibration procedures and intervals. Recalibrate test instruments immediately whenever instruments have been repaired following damage or dropping. Affix calibration tags to test instruments. Instruments shall have been calibrated within six months prior to use.

1.11 COORDINATION

- A. Coordinating Meetings: CxA shall conduct coordination meetings of the commissioning team to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.
- B. Pretesting Meetings: CxA shall conduct pretest meetings of the commissioning team to review startup reports, pretest inspection results, testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.
- C. Testing Coordination: CxA shall coordinate sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- D. Manufacturers' Field Services: CxA and Contractor shall coordinate services of manufacturers' field services.

1.12 ALTERNATES

- A. Refer to Division 01, -Alternates for description of work under this section affected by alternates.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 OPERATION AND MAINTENANCE TRAINING REQUIREMENTS

- A. Training Preparation Conference: Before operation and maintenance training, CxA shall convene a training preparation conference to include Owner's operation and maintenance personnel, Contractor, and subcontractors. In addition to requirements specified in Division 01 Section "Demonstration and Training," perform the following:
1. Review installed systems, subsystems, and equipment.
 2. Review instructor qualifications.
 3. Review instructional methods and procedures.
 4. Review training module outlines and contents.
 5. Review course materials (including operation and maintenance manuals).
 6. Inspect and discuss locations and other facilities required for instruction.
 7. Review and finalize training schedule and verify availability of educational materials, instructors, audiovisual equipment, and facilities needed to avoid delays.
 8. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.
- B. Training Modules: Develop an instruction program that includes individual training modules for each system, subsystem, and equipment as specified in Division 01 Section "Demonstration and Training."

END OF SECTION

SECTION 27 10 00

TELECOMMUNICATIONS CABLING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Local Area Network (LAN) Cabling
- B. Telephone Cabling
- C. Classroom A/V Cabling
- D. Termination Equipment for Telecommunications
- E. Faceplates and Outlets
- F. Coaxial Cable and associated equipment

1.02 DEFINITIONS

- A. "Backbone Cabling" refers to telecommunications cabling that provides interconnections between telecommunications rooms, equipment rooms, and entrance facilities.
- B. "Communications Network Outlet (CNO)" refers to a collection of one or more mechanical cable termination device for horizontal cable in the work area.
- C. "Drop" refers to the vertical transition to a location of one or more CNOs.
- D. "Horizontal Cabling" refers to the cabling between and including the work area communications network outlet and the horizontal cross-connect in the telecommunications room.
- E. "Jack" refers to a female-style telecommunication receptacle.
- F. "Telecom Room (TR)" refers to an enclosed space for housing telecommunications equipment, cable terminations, and cross-connects. The room is the recognized cross-connect between the backbone or trunk cabling and horizontal cabling (otherwise labeled IDF).
- G. "Telecom Equipment Room (TER)" refers to a centralized space for telecommunications equipment that serves the occupants of the building, usually containing the headend equipment for the distribution systems found in the building (otherwise labeled MDF).

1.03 REFERENCES

- A. Industry Codes, Standards and Methods shall be observed, including the following:
 - 1. State of Delaware K-12 Wiring Standards (latest edition at time of bidding)
 - 2. ANSI/TIA/EIA-568-B.1: Commercial Building Telecommunications Cabling Standard Part 1 – General Requirements
 - 3. ANSI/TIA/EIA-568-B.2: Commercial Building Telecommunications Cabling Standard Part 2 – Balanced Twisted Pair Cabling Components
 - 4. ANSI/TIA/EIA-568-B.3: Commercial Building Telecommunications Cabling Standard Part 3 – Optical Fiber Cabling Components
 - 5. ANSI/TIA/EIA-569-A: Commercial Building Standard for Telecommunications Pathways and Spaces
 - 6. ANSI/TIA/EIA-570-A: Residential Telecommunications Cabling Standard
 - 7. ANSI/TIA/EIA-606: Administration Standard for Telecommunications Infrastructure of Commercial Buildings

8. ANSI/TIA/EIA-607: Commercial Building Grounding and Bonding Requirements for Telecommunications
 9. ANSI/TIA/EIA-758: Customer-Owned Outside Plant Telecommunications Cabling Standard
 10. BICSI Telecommunications Distribution Methods Manual (TDMM), Twelfth Edition
 11. National Fire Protection Agency (NFPA-70): National Electrical Code (NEC)
- B. Comply with all local, state and federal codes for telecommunications installations. The Authority Having Jurisdiction (AHJ) shall be consulted on the project by the contractor team.

1.04 SYSTEM DESCRIPTION

A. Design Requirements

1. LAN and Telephone Distribution:

- a. Provide labor, materials, equipment, services and operations required for complete installation of LAN compatible with Ethernet 10Base-T (10Mbs), Fast Ethernet 100Base-T (100Mbs), 155Mbs ATM and Gigabit Ethernet 1000 Base-T (1000Mbs) with single mode/multimode hybrid fiber optic backbone cable and Category 6 copper horizontal (station) wiring.
- b. All wiring including copper and fiber optic employs a star topology.
 - i. Category 6 UTP wiring terminates on Category 6 RJ-45 jack at workstation and on Category 6 rack-mounted patch panel in telecommunications room. Connections wired per TIA/EIA-568A.
 - ii. Multi-strand composite fiber optic cable connects distribution racks between telecommunications rooms, and terminates on rack-mounted fiber optic patch panel.
- c. Network cables routed from distribution racks throughout building as shown on T-Drawings. Drop to outlet installed in conduit and wall box, or dual-channel surface mounted raceway to communications outlet in classrooms, offices, or other locations indicated on T-Drawings.
 - i. Refer to notes on each drawing to determine exact installation methods.
 - ii. Note and record all cable lengths to the nearest foot.
 - iii. Replace any cable exceeding 90 meters (295 feet) and route to reduce length to a minimum of 90 meters. Complete all cable rerouting for compliance at no additional cost to School district.
 - iv. Identify to Design consultant prior to installation of any cables that cannot be reduced to 90 meters or less in total length (rise and run).
 - v. Strictly adhere to most current version of TIA/EIA Telecommunications cabling standards.
 - vi. Unless otherwise noted on T-Drawings, provide ladder-type cable tray from corridor to distribution racks and termination fields in telecommunication rooms.
 - vii. Install "waterfall" device providing sweep from cable tray to data rack/cabinet and other vertical transitions.
- d. Data and Telephone outlets: Category 6 rated RJ-45 type connectors with all four copper pairs terminated and tested in accordance with EIA 568B wiring standard.

- e. Fiber Optic Horizontal and Backbone Cables: Terminate on panels in each rack and connectors with ceramic sleeves. Terminate and test all strands unless otherwise noted.
 - f. Permanently identify and label all cables and termination devices, at distribution rack and workstation in accordance with ANSI TIA/EIA-606 Standard or as agreed by design consultant and school district.
 - g. Remove and replace any cables failing to meet end-to-end testing requirements; do not abandon cable in place. All cable shall be terminated at both ends, unless noted in T-Drawings.
- B. Classroom A/V harness shall include pre-terminated cables and connectors, provide analog and digital signal transmission and function with the intended input and display devices.
- C. Performance Requirements
- 1. Comply with applicable requirements in Local, State and Federal Codes, TIA/EIA Standards, and BICSI methodology.

1.05 SUBMITTALS

- A. Comply with requirements of Division 0 and Division 1 - Submittals and as modified below.
- B. Contractor must maintain a local presence in the State of Delaware. Submit office locations for review.
- C. Contractor must provide proof that service and warranty work can be initiated with a 24 hour time period from a service call.
- D. All submittals must conform to the state of Delaware K12 wiring standards, please refer to this link for additional details:
 - 1. <http://dti.delaware.gov/pdfs/pp/CablingAndWiringStandard-K12.pdf>
- E. Product Data: Submit manufacturer's product literature, technical specifications and similar information for the following items demonstrating compliance with the specified requirements. Product submittals must clearly highlight the equipment being proposed. Failure to clearly indicate the selected items shall be rejected at the contractor's expense.
 - 1. Communications outlets, faceplates, and accessories. (Some assemblies must be coordinated with section 274100 A/V classroom equipment.)
 - 2. Fiber optic cable, patch cables and terminations.
 - 3. Copper cable, patch cables and termination devices.
 - 4. Inner duct and accessories.
 - 5. Rack configurations and wiring diagrams.
 - 6. Network cabling test equipment and process (routines).
 - 7. Equipment Racks
 - 8. Outlets
 - 9. Coaxial cable and Equipment.
- F. Samples: Provide samples of outlets and assemblies as described below, prior to installation, for approval by designer.
 - 1. Telecommunications outlets – Submit samples of telecommunications outlets to be provided including following components and characteristics:

- a. Flush mounted and Raceway outlets – Completely assembled faceplate and wall box with each type of outlet to be mounted in faceplate, including blank covers, dust covers, labeling field, cabling, and adapter plates and bezels required.
 - b. Sample characteristics:
 - i. Provide all components in colors selected by Design consultant.
 - ii. Provide multiple outlet samples where required to accurately represent range of outlets to be provided.
- G. The Contractor shall submit line drawings of all systems showing major components of the systems. Submit wiring diagrams showing typical connections for all systems and equipment.
- H. Quality Control Submittal
- 1. Test Reports: Submit complete test data and reports with exact labels used on cables, patch panels and faceplates.
 - 2. Certificates
 - a. Manufacturer Certification: Submit certification from manufacturer of products to be installed under this contract certifying that Installer is authorized by manufacturer to install specified products.
 - b. Installer Experience Listing: Submit list of at least 5 completed projects as specified below in “Quality Assurance – Qualifications – Installer.”
- I. Contract Closeout Submittal: Comply with requirements of Division 0, including submission of operating and maintenance instructions as item in “Operation and Maintenance Data” manual described in that Section.

1.06 QUALITY ASSURANCE

- A. All Work shall be installed in a first class, neat and workmanlike manner by skilled Technicians. The quality of the workmanship shall be subject to inspection and approval by authorized school district personnel. Any work found to be of inferior quality and/or workmanship shall be replaced and/or reworked until the approval of school district is obtained.
- B. Installer Qualifications: Qualified to cable, terminate and test data network cabling system specified in this Section, certified by manufacturer of products to be installed, and completed at least 5 computer network installations of similar size, nature and complexity as specified for this project.
- C. Conditions for Consideration of "Or Equal" Products: Where products are specified by name and accompanied by the term "or equal", the proposed "or equal" product will be considered when the following conditions are satisfied. If all the following conditions are not satisfied, Design Consultant will return requests without action, except to record noncompliance with these requirements:
 - 1. Proposed product does not require extensive revisions to the Contract Documents.
 - 2. With the exception of the product name or number and manufacturer's name, proposed product conforms with requirements indicated on the Drawings and in the Specifications in every respect and will produce indicated results.
 - 3. Proposed product is fully documented and properly submitted.
 - 4. Proposed product has received necessary approvals of authorities having jurisdiction.
 - 5. Proposed product is compatible with AND has been coordinated with other portions of the Work.
 - 6. Proposed product provides specified warranty.

7. If proposed product involves more than one contractor, proposed product has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
8. Submission is accompanied with detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
9. Submission is accompanied with a list of similar installations for completed projects with project names and addresses and names and addresses of design consultants and authorities, if requested.
10. Submission is accompanied with proposed product's Manufacturer signed written statement on Manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents.

1.07 WARRANTY

- A. Installer's Warranty: Provide manufacturer's system warranty against electrical or mechanical defects for 1 year from date of final acceptance.
- B. A fifteen (15) year Extended Product Warranty and Systems Assurance Warranty for this wiring system shall be provided by the Manufacturer as follows:
 1. Extended Product Warranty: The Extended Product Warranty shall ensure against product and workmanship defects, that all approved cabling components exceed the specifications of TIA/EIA 568B and Addenda for fiber link/channels and copper components, for a fifteen (15) year period. The warranty shall apply to all passive components, including both cable and connecting hardware as a combined system. Any claims cover replacement costs on any defective product, both material and labor. Extended warranties beyond fifteen (15) years will be considered.
 2. System Assurance: The System Assurance shall cover the failure of the wiring system to support the application which it was designed to support as well as additional application(s) introduced in the future by recognized standards or user forums that use the TIA/EIA 568B component and link/channel specifications for cabling, for a fifteen (15) year period.
 3. System Certification: Upon successful completion of the installation and subsequent inspection, the School district shall be provided with a numbered certificate, from the manufacturing company, registering the installation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials shall be new and unused except as noted in T-series Drawings.
- B. All cables shall be plenum rated
- C. System wiring and equipment installation shall be in accordance with good engineering practices as established by the EIA and the NEC. Wiring shall meet all state and local electrical codes. All wiring shall test free from all grounds and shorts.
- D. Velcro straps shall be used for bundling wires. Wires shall be bundled loosely. Permanent cable ties are not acceptable.
- E. Wiring system shall consist of the following:
 1. Accessories and Appurtenances
 2. Cable Management Devices
 3. Fiber Optic Cable and Terminators (as indicated on drawings)

4. Copper and Fiber Patch cables
5. Remote Jacks
6. Termination/Patch Panels
7. Twisted Pair Data Cables
8. Pre-Terminated A/V cables, connectors and faceplates.
9. The Cable Infrastructure Project requires a structured cabling system, or equivalent single-manufacturer solution. The Category 6 portion of the cabling system shall comply with the link and channel performance requirements of ANSI/TIA/EIA 568-B.2-1 "Performance Specifications for 4-pair 100 Ohm Category 6 Cabling". The cabling system shall be backed by a 15-Year System Warranty.
10. The work includes the provision for a complete and operable Local Area Network Building Data System consisting of active and non-active components. The cabling system and all wiring components shall meet and comprise an EIA/TIA Category 6 Enhanced Wiring System. With master and remote data equipment the completed system shall provide 1Gbps Fiber Optic Fast Ethernet communications backbone support to the edge switches and Ethernet 1000 BASE-T to the workstation data jacks. The system shall provide such services as computer networking, data transmission, graphics and other multi-media offerings.
11. Provide one home run cable from each data/voice jack to appropriate wiring closet.
12. Cable length of home run cable shall not exceed 90 meters.
13. All Modular jack panels shall be wired to EIA/TIA 568B

2.02 HORIZONTAL CABLES

- A. Category 6 100 ohm UTP Voice, Data, Wireless and Security cables shall each have a distinctive color. Submit for approval from design team.
 1. Hubbell C6SPxx
 2. Hubbell C6RPxx
 3. Hitachi 30025-8
 4. Hitachi 30024-8
 5. Or approved equal from
 - a. Mohawk
 - b. Belden
 - c. Berk-Tek
 - d. Systimax

2.03 BACKBONE CABLES

- A. Multi-pair Cat 5e Riser Cables
 1. Hitachi 30093-50
 2. Hitachi 30172-100
 3. Or approved equal from
 - a. Mohawk
 - b. Belden

- c. Berk-Tek
- B. Multi-Mode Fiber Optic Cables
 - 1. Hubbell HFC1012P3
 - 2. Hitachi 60522-12
 - 3. Or approved equal from
 - a. Corning
 - b. Berk-Tek

2.04 TERMINATION FIELDS

- A. Category 6 48-Port Patch Panels. Patch panels shall be segregated for POE switches and non-POE switches.
 - 1. Provide 15% spare capacity
 - 2. Hubbell P6E48U
 - 3. Hubbell PCBLMGT Rear Cable Manager
 - 4. Or approved equal from
 - a. Ortronics
 - b. Panduit
 - c. Systimax
- B. Fiber Enclosure
 - 1. Hubbell 2U FCR350SP36R
 - 2. Hubbell 2U FCR350SP54R
 - 3. Hubbell 3U FCR525SPR
 - 4. Hubbell 4U FCR700SP
 - 5. Or approved equal from
 - a. Ortronics
 - b. Panduit
 - c. Systimax
- C. Fiber Adaptor Panels
 - 1. Hubbell FSPLCDM6AQ
 - 2. Hubbell FSPLCQM6AQ
 - 3. Hubbell FSPLCDS6
 - 4. Hubbell FSPLCQS3
 - 5. Or approved equal from
 - a. Ortronics
 - b. Panduit
 - c. Systimax

- D. Fiber Connector
 - 1. Hubbell FCLC900K50GM12 50/125um OM3 Aqua
 - 2. Hubbell FCLC900K50GM12 9/125 UPC
 - 3. Or approved equal from
 - a. Ortronics
 - b. Panduit
 - c. Systimax

- E. 110 Blocks
 - 1. Hubbell 110BLK50FTK5
 - 2. Hubbell 110BLK100FTK5
 - 3. Hubbell 110BLK300FTK5
 - 4. Or approved equal from
 - a. Ortronics
 - b. Panduit
 - c. Systimax

2.05 OUTLETS

- A. Category 6 Voice, Data, Wireless and Security Jacks
 - 1. Jack shall have distinctive colors from each other and should match the associated cable color.
 - 2. Hubbell HXJ6xx (replace xx with specified colors)
 - 3. Or approved equal from
 - a. Ortronics
 - b. Panduit
 - c. Systimax

- B. Faceplates
 - 1. Faceplates must be coordinated with A/V outlets included in section 274100.
 - 2. Hubbell IFP11xx
 - 3. Hubbell IFP12xx
 - 4. Hubbell IFP13xx
 - 5. Hubbell IFP14xx
 - 6. Hubbell IFP16xx
 - 7. Hubbell IFP26xx
 - 8. Hubbell IFP29xx
 - 9. Hubbell IFP212xx
 - 10. Or approved equal from
 - a. Ortronics

- b. Panduit
- c. Systimax

2.06 PATCH CORDS

- A. Copper Patch Cords
 - 1. Hubbell HC6xx03
 - 2. Hubbell HC6xx05
 - 3. Hubbell HC6xx07
 - 4. Hubbell HC6xx010
 - 5. Hubbell HC6xx15
 - 6. Hubbell HC6xx20
 - 7. Hubbell HC6xx25
 - 8. Or approved equal from
 - a. Mohawk
 - b. Ortronics
 - c. Panduit
 - d. Systimax
- B. Fiber Patch Cords
 - 1. Hubbell DFPCSCSCExMM
 - 2. Or approved equal from
 - a. Mohawk
 - b. Ortronics
 - c. Panduit
 - d. Systimax

2.07 COAXIAL CABLE AND EQUIPMENT

- A. RG-11 Quad Shield Plenum Trunk Cable
- B. RG-6 Quad Shield Plenum Drop Cable
- C. Blonder Tongue 850 MHZ Bi-Directional Amplifiers
- D. Blonder Tongue SRT Taps
- E. Blonder Tongue SXRS Splitters
- F. Blonder Tongue Diplex Filters
- G. Associated F connectors

2.08 CLASSROOM A/V CABLING AND FACEPLATES

- A. Rapid Run Multi-Format Runner
 - 1. Or approved equal factory terminated style runner cable
- B. Classroom A/V Harness

1. The instructor's input location and the display device output location shall include the following cables. (see T series drawings for exact cable types and connections)
 - a. Rapid Run Multi format runner cables.
 - b. Rapid Run Composite Stereo Audio (See drawings for types)
 - i. RCA style factory terminated connectors
 - ii. 3.5 MM Stereo terminated connectors
 - c. Rapid Run Composite Video (See drawings for types)
 - i. RCA style factory terminated connectors
 - d. Rapid Run VGA (see drawings for types)
 - i. HD-15 Pin Video factory terminated connectors
 - e. Rapid Run HDMI (see drawings for types)
 - i. Active and Passive plates with factory terminated connectors
 - f. Cables to To Go USB
 - i. USB Decora Transmitter via twisted pair cable
 - ii. USB Dongle Receiver via twisted pair cable.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine conditions under which telecommunications cabling and equipment and related components are to be installed in coordination with Installer of materials and components specified in this Section and notify affected Prime Contractors and Design consultant in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected to ensure a safe and timely installation.
 1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Design consultant written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.
 2. Visit Site to identify and become familiar with existing field conditions and specific requirements of each Site.
 3. Verify all dimensions in field and confirm condition of existing hardware to be utilized.
 4. Confirm space requirements and physical confines of all work areas to ensure that all materials can be installed in indicated spaces.
 5. Confirm all outlet locations and cable pathways and advise Design consultant in writing of any discrepancies or issues in Design described in Contract Documents.

3.02 PREPARATION

- A. Protection: Provide adequate protection of equipment and hardware before and after installation.
- B. Existing Communications Services: Ensure all telecommunications systems and equipment (voice, video, wireless, data and security) remain operational throughout the project.

1. Identify any additional telecommunications outlets, circuits, and wiring at the site not shown on T-Drawings and interfering with installation of specified equipment.
2. Contact local telephone, network and CATV companies to identify all circuits providing existing services.
3. Remove all accessible portions of abandoned communications cabling per NEC 800.52. Tag all communications cabling not terminated at both ends but retained for future use.

3.03 INSTALLATION

- A. Provide and install all components necessary to install complete telecommunications cabling and equipment systems, including (but is not limited to) connectors, patch cables, terminators, etc...
 1. Cable runs shall be continuous and unbroken from end to end. Splicing of any Telephone, LAN, or coaxial video distribution cable is prohibited. Horizontal cabling for LAN and telephone shall end in rack-mounted patch panels.
 2. Secure all horizontal cables within ceiling cavities to building structural elements
 3. Loosely bundle all cables and support from structure at unequal intervals from 5 to 6 feet with spring steel fasteners and cable clip rated for use with high performance cables where cable tray or other support structure has not been provided as indicated on Drawings. All mounting clips shall be seismic type as per BOCA.
 4. Do not violate manufacturer's recommended loadings. Leave 30% capacity for future use of pathway.
 5. Verify all horizontal cable run lengths prior to installation. Re-distribute horizontal cabling to maintain distance requirements and maintain pathway route accessibility.
 6. Do not support cables from ceiling grid T-Bars, grid wire supports or bridle rings. Do not allow cables to touch ceiling grid.
 7. Do not secure cables with permanent cable ties. Velcro straps must be used. Do not tighten cable bundles in such a way as to cause jacket deformation or damage. Cables shall not be cinched together tightly.
 8. Provide a 10-foot service loop in all fiber optical cables to permit future cable splice and repair at all building entrance points and termination points.
 9. Place cables in compliance with TIA/EIA-568.B standards and BICSI recommended methods.
 10. Tight 90-degree bends are unacceptable, and use of plastic "cinch-type" tie-wraps are not permitted, in order to prevent damage to cable jacket and compromise the cable's electrical or optical characteristics.
 11. Cable bundles shall be neatly routed with a service loop to provide 10 feet of slack at the cross-connect end and as noted in the T-drawings. Cable bundles shall be secured using only black Velcro cable wraps.
 12. 10 feet of service loop shall be provided in the ceiling at each workstation. Contractor shall not secure service loop in coils, but route in such a manner as to minimize EMI.
 13. Wireless outlet locations
 - a. Wireless locations shown on T-series drawings shall be installed outside of a faceplate and include a 15' service loop at the station end to exactly locate the WAP.
 - b. Ceiling shall be marked and as-builts shall reflect the location of all terminated ends and service loops as directed by SCHOOL DISTRICT personnel.

- c. Cable shall be terminated in a female RJ-45 female jack, and left with a service loop as described in T-series drawings. Cable shall be tested and documented per previous requirements.
 - d. After completion of wireless site survey, outlet shall be re-terminated for connection to Wireless Access Point.
- B. Determine allowable cable proximity to other electrical power sources of 480 Volts or less using TIA/EIA-569A "Cabling Pathway Standard" for UTP cable separations from sources of EMI:

1. Minimum separation distance from Power Source at 480 V or less:

CONDITION	<u>< 2kVA</u>	<u>2-5 kV</u>	<u>> 5 kVA</u>
a. Unshielded power lines or electrical equipment in proximity to open or non-metal pathways	6 in.	12 in.	24 in.
b. Unshielded power lines or electrical equipment in proximity to open or non-metal pathways	3 in.	6 in.	12 in.
c. Power lines enclosed in a grounded metal conduit (or equivalent shielding) in proximity to grounded metal conduit pathway	3 in.	6 in.	12 in.
d. Transformers & Elec. Motors	40 in.	40 in.	40 in.
e. Fluorescent Lighting	12 in.	12 in.	12 in.

C. Interior Fiber Optical Cable Installation Requirements

1. Install all interior fiber optic backbone cables in 1-inch plenum-rated inner duct, similar to Pyramid Industries #PLM100(T) where fiber optical cable placed in cable tray or otherwise fully supported in accordance with manufacturer's requirements.
2. Install all outdoor rated communications cables not rated for plenum placement in interior environments in metallic conduit, according to NEC Articles 770 and 800.
3. Install inner duct for fiber optic cabling in all conduits, as necessary for proper support of cables, or where required to assure pull-in tension not exceeding manufacturer's recommendations.
4. Provide pull strings or ropes in all conduit and inner duct used for communications cables.

D. Cabling System

1. Where not provided as part of the electrical work or the data/voice/security work, the Contractor shall furnish and install necessary conduit, raceways, pull boxes, outlet boxes and cable to provide a complete system as herein specified. All wiring shall be tested for continuity and freedom of all grounds and short-circuits. All outlet boxes shall be as specified for other wiring devices; size as required by equipment manufacturer.
2. Cables shall be installed in raceways or EMT, as detailed on the drawings and/or as specified, above non-accessible ceilings, where exposed, and wherever it may be subject to physical damage. Where not provided as part of the electrical work or the data/voice work, the Contractor shall provide a raceway (conduit) from each outlet to above the accessible ceiling. Otherwise, cable shall be installed above accessible suspended tile ceilings and attached to

building structure with approved bridle rings or J-hooks, cable is not permitted to rest on ceiling. The cable routes used shall avoid steam lines, power wiring and other utilities that may adversely affect the system's performance or result in damage to the cable. If the routes required place the cable in proximity to these utilities, the cable shall be suitably protected. Under no circumstances shall cable be run in hangers used for pipes or electric conduits nor shall the cable be supported in any way by attachment to these pipes, conduits or ceiling hangers.

3. During the installation work, improper bending, stretching, twisting, kinking, pinching or any other improper handling must not deform the cable. All cable runs shall contain "S" loops or other means to accommodate expansion and contraction. Coaxial cables shall not bend at any point of installation to a radius of less than ten times the diameter of the cable or less than the value recommended by the cable manufacturer. Cable connected to electronic equipment in the system shall be tagged to show its function and the location of its other end. All labels shall be of durable material and securely fastened to the cable.
 4. All cables shall be fastened securely with suitable hardware so as to avoid sharp bends and to prevent rubbing against sharp corners and in a manner to prevent injury or physical distortion.
 5. Wiring for all wall-mounted equipment shall be concealed in raceway (conduit) from outlet to above removable ceilings, unless noted otherwise.
 6. Wiring installed above removable ceilings shall be installed on bridle rings. No cables shall be installed on roof or exterior of building.
 7. Infrastructure properly terminated on backboard, neatly arranged in orderly fashion and accurately identified.
 8. Equipment cabinet(s) anchored to wall or floor utilizing an approved method.
 9. Install all exposed cabling in surface raceway by Wiremold, Hubbell or Panduit where in-wall conduit has not been provided. Follow all manufacturers' guidelines requirements regarding bending radius and slack. All bends, offsets and fittings shall be appropriately sized to provide 30% capacity after installation.
- E. Install all cable in accordance with National, state and local codes and TIA/EIA Standards, and BICSI methods.
1. Follow manufacturer's guidelines and requirements for all cable termination.
 2. Install and connect #6 AWG to bond all equipment racks, conduits and cable trays to busbar in each telecom room. Each telecom room shall be interconnected to TER with #3 AWG bonding backbone to TMGB per Telecommunications Grounding Diagram. It shall be left to licensed electrician to interconnect TMGB with lowest point of building ground. Contractor shall verify TMGB has been bonded to building ground before declaring completion.
- F. Permanently identify all system components following TIA/EIA-606A "Administration Standard for Commercial Telecommunications Infrastructure" with identification format:
1. Identification: Provide permanent identification labels for outlets, faceplates, patch panels, access panels and entrance facilities.
 2. Each individual cable shall be labeled on both ends of cable terminations regardless of cable intended use. Labels must be machine printed with permanent black ink on laminated white label material. Contractors must check with appropriate school district personnel for appropriate labeling scheme. The intended format and labeling material must be approved by school district Technology Department before labeling begins.

3.04 TESTING

A. Backbone and Horizontal Cabling

1. Upon completion of work, all parts of the telecommunications installation shall be tested by the Telecommunications Contractor and demonstrated free of any defects. Preliminary testing will be permitted but shall not be accepted in lieu of obtaining final test results. Final test results shall be accomplished by the use of proper test equipment for the system being tested.
 2. Test results shall be submitted to design consultant for review and approval. Provide in electronic format.
 3. Re-terminate and re-test any cables or pairs of cables failing end-to-end testing requirements. Replace any faulty cables/pairs or termination devices. Remove all defective cables completely from pathways.
- B. Audio Visual Harness and Cables
1. The contractor shall test all cables included in the harness for proper signal transmission based on manufacturer standards.
 2. The contractor shall record remove any cable that does not meet manufacturer standards and replace it with a correctly functioning cable.
 3. The contractor shall demonstrate that the installed cables meet manufacturer standards for signal transmission prior to the job being considered complete.
 4. All cables shall be properly identified and labeled.

3.05 AS-BUILTS

- A. Accurate as-built drawings shall be provided in electronic and hard copy format by the installing contractor for review and approval by the design team and owner.
1. Drawings shall accurately show and describe all cable routing, labeling, terminations, cross-connects and equipment location in redline format.
 2. 3 copies of electronic (CAD) drawings shall be distributed on appropriate media: 1 to construction management, 1 to designers and 1 to the school district.
 3. 3 hard copies of CAD drawings shall be plotted on full size sheets and test results of every installed cable have been given to the construction management for appropriate distribution.

3.06 ACCEPTANCE

- A. Contractors work shall be considered complete after the following conditions have been met:
1. As-builts have been approved.
 2. Cable installation is complete and all cable runs have been tested and documented to be installed according to specifications and drawings.
 3. A school district technology representative has successfully tested the "LIVE" system.
 4. All punch list items have been reconciled.
 5. All disturbed ceiling panels, firestopping materials, covers, etc. have been properly reinstalled.
 6. All materials and trash have been removed from the site.
 7. A 1-Year Installers warranty has been given to a school district Technology representative.
 8. Submit Manufacturers Extended Warranty Application.

END OF SECTION

SECTION 27 41 00

AUDIO VISUAL AND SOUND SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Classroom Sound Enhancement System
2. Specialized Instructional Space A/V Systems
3. Cafeteria A/V System
4. Main Gymnasium A/V System (Sheet T-411 Equipment is an Add Alternate)
5. Auxiliary Gymnasium Sound System
6. Music Room Sound Systems
7. Kitchen Lab Camera System
8. Video Wall Matrix

1.02 DEFINITIONS

- A. "Sound Enhancement" refers to a stand alone sound system which includes speakers, speaker wire, an infrared microphone and receiver, a pendant style microphone and amp/mixer unit.
- B. "Communications Network Outlet (CNO)" refers to a collection of one or more mechanical cable termination device for horizontal cable in the work area.
- C. "Drop" refers to the vertical transition to a location of one or more CNOs.
- D. "Horizontal Cabling" refers to the cabling between and including the work area communications network outlet and the horizontal cross-connect in the telecommunications room.
- E. "Jack" refers to a female-style telecommunication receptacle.

1.03 SYSTEM DESCRIPTION

A. Design Requirements

1. Classroom sound amplification and distribution through a pendant style portable microphone and at least one hand held microphone per learning area. System shall include inputs and controls for other classroom devices.
 - a. The system shall consist of a ceiling IR module and a low-profile wall mounted controller unit.
 - b. Amplifier/Receiver must have audio inputs for at least three auxiliary devices and an additional input to allow transmitting of sound to ceiling speakers from the microphone.
2. Specialized Space A/V systems shall include audio and video input locations, signal processing and scaling, switching, mixing distribution and amplification to speakers and display devices. The system shall be capable of analog and digital signal formats and have lectern or wall mounted controllers.

3. Cafeteria A/V System shall include audio and video input locations, signal processing and scaling, switching, mixing distribution and amplification to speakers and display devices. The system shall be capable of analog and digital signal formats as well as zoning and zone combining. Wireless microphones and assistive listening devices shall be provided as part of the systems
 4. Gymnasium A/V System shall include audio and video input locations, signal processing and scaling, switching, mixing distribution and amplification to speakers and display devices. The system shall be capable of analog and digital signal formats as well as zoning and zone combining. Wireless microphones and assistive listening devices shall be provided as part of the systems
 5. Auxiliary Gymnasium multi-input, mixing and multi-loudspeaker system shall be provided. The equipment rack shall contain the audio equipment and allow for presets or live mixing if various inputs. Loudspeakers shall be provided and place as shown on the drawings. Clearly label and color code the master volume control for all functions. Wireless microphones and assistive listening devices shall be provided as part of the systems
 6. A music room multi-input, mixing and multi-loudspeaker system shall be provided. The mobile cart shall contain the audio equipment and allow for presets or live mixing if various inputs. Loudspeakers shall be provided and place as shown on the drawings. Clearly label and color code the master volume control for all functions.
 7. Kitchen Lab camera system shall consist of a ceiling mounted PTZ camera connected to an HDMI video splitter. The video splitter shall be connected to two wall mounted LCD monitors. System shall include all cabling and connectors, electronics, power supplies, remotes and accessories.
 8. Video Wall Matrix shall be a 4 input 4 output system including all cables, connectors, processors and accessories.
 9. All stand-alone sound systems must have call override from the Intercom/PA system in the case of an emergency.
- B. Performance Requirements
1. Comply with applicable requirements in Local, State and Federal Codes, TIA/EIA Standards, and BICSI methodology.
 2. Specified cabling system derived from recommendations in approved telecommunications industry codes, standards and methods, including the following documents:
 - a. Articles 250, 725, 760, 770, 800,810 and 820 of the current National Electrical Code.
 - b. ANSI/TIA/EIA-568-B.1: Commercial Building Telecommunications Cabling Standard Part 1 – General Requirements
 - c. ANSI/TIA/EIA-569-A: Commercial Building Standard for Telecommunications Pathways and Spaces
 - d. ANSI/TIA/EIA-606: Administration Standard for Telecommunications Infrastructure of Commercial Buildings
 - e. BICSI Telecommunications Distribution Methods Manual (TDMM), 12th Edition
 - f. National Fire Protection Agency (NFPA-70): National Electrical Code (NEC)

1.04 SUBMITTALS

- A. Comply with requirements of Division 0 and Division 1 - Submittals and as modified below.
- B. Contractor must maintain a local presence in the State of Delaware. Submit office locations for review.

- C. Contractor must provide proof that service and warranty work can be initiated with a 24 hour time period from a service call.
- D. All submittals must conform to the state of Delaware K-12 wiring standards, please refer to this link for additional details:
 - 1. <http://dti.delaware.gov/pdfs/pp/CablingAndWiringStandard-K12.pdf>
- E. Product Data: Submit manufacturer's product literature, technical specifications and similar information for the following items demonstrating compliance with the specified requirements. Product submittals must clearly highlight the equipment being proposed. Failure to clearly indicate the selected items shall be rejected at the contractor's expense.
 - 1. Digital and Analog Input Plates
 - 2. Scalers
 - 3. Processors
 - 4. Mixers
 - 5. Touch Panels
 - 6. Controllers
 - 7. Signal Extenders
 - 8. Switchers
 - 9. Display Devices
 - 10. Input Sources
 - 11. Sound coverage and pressure level diagram for each auxiliary sound system
 - 12. Sound Amplifier
 - 13. Sound Speakers
 - 14. Sound Microphones
 - 15. Sound Cabling and Wiring
 - 16. Audio Visual cables and connectors
 - 17. Communications outlets, faceplates, and accessories.
 - 18. Wall outlets
- F. Samples: Provide samples of equipment, cables, microphones and assemblies as described below, prior to installation, for approval by designer.
 - 1. Sound Enhancement – Submit samples of audio visual cables provided including following components and characteristics:
 - a. Sample characteristics:
 - i. Provide all components in colors selected by Design consultant.
 - ii. Provide multiple samples where required to accurately represent range of cables to be provided.

- G. The Contractor shall submit shop drawing line drawings of all systems showing major components of the systems. Submit wiring diagrams showing typical connections for all systems and equipment.
- H. Quality Control Submittal
 - 1. Test Reports: Submit complete sample test data and reports with exact labels used on cables and faceplates.
 - 2. Certificates
 - a. Manufacturer Certification: Submit certification from manufacturer of products to be installed under this contract certifying that Installer is authorized by manufacturer to install specified products.
 - b. Installer Experience Listing: Submit list of at least 5 completed projects as specified below in "Quality Assurance – Qualifications – Installer."
- I. Contract Closeout Submittal: Comply with requirements of Division 0, including submission of operating and maintenance instructions as item in "Operation and Maintenance Data" manual described in that Section.

1.05 QUALITY ASSURANCE

- A. All Work shall be installed in a first class, neat and professional manner by skilled Technicians. The quality of the workmanship shall be subject to inspection and approval by authorized school district personnel. Any work found to be of inferior quality and/or workmanship shall be replaced and/or reworked until the approval of the school district is obtained.
- B. Installer Qualifications: Qualified to cable, terminate and test cabling system specified in this Section, certified by manufacturer of products to be installed, and completed at least 5 installations of similar size, nature and complexity as specified for this project.
- C. Conditions for Consideration of "Or Equal" Products: Where products are specified by name and accompanied by the term "or equal", the proposed "or equal" product will be considered when the following conditions are satisfied. If all the following conditions are not satisfied, Design Consultant will return requests without action, except to record noncompliance with these requirements:
 - 1. Proposed product does not require extensive revisions to the Contract Documents.
 - 2. With the exception of the product name or number and manufacturer's name, proposed product conforms with requirements indicated on the Drawings and in the Specifications in every respect and will produce indicated results.
 - 3. Proposed product is fully documented and properly submitted.
 - 4. Proposed product has received necessary approvals of authorities having jurisdiction.
 - 5. Proposed product is compatible with AND has been coordinated with other portions of the Work.
 - 6. Proposed product provides specified warranty.
 - 7. If proposed product involves more than one contractor, proposed product has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 - 8. Submission is accompanied with detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 9. Submission is accompanied with a list of similar installations for completed projects with project names and addresses and names and addresses of design consultants and authorities, if requested.

10. Submission is accompanied with proposed product's Manufacturer signed written statement on Manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents.

1.06 WARRANTY

- A. Installer's Warranty: Provide manufacturer's system warranty against electrical or mechanical defects for 1 year from date of final acceptance.
 1. System Certification: Upon successful completion of the installation and subsequent inspection, the Authority shall be provided with a numbered certificate, from the manufacturing company, registering the installation.

PART 2 - PRODUCTS

2.01 MATERIALS – ALL MATERIALS SHALL BE NEW AND UNUSED

- A. Classroom Sound Equipment (Listen Technologies Listen Point)
 1. ListenPoint Advanced Control Unit
 2. ListenPoint Powered Room Module
 3. ListenPoint Microphone/Media Interface Kit
 4. ListenPoint LPT-A104 Ceiling Speakers
 5. ListenPoint Audio Cable Kit
 6. Cable
 - a. Speaker Cable:
 - i. Class 2 or better plenum rated. (16 AWG Plenum)
 - b. Infrared Cable
 - i. Plenum rated Cat 5e or Cat6 UTP
 7. Or approved equal from
 - a. Rauland Class
 - b. Or approved Equal
- B. Specialized Space A/V systems (Rooms D128, B119, B303 and G122)
 1. Extron Pole Vault with Voice Lift Systems or approved equal.
 - a. See Drawings for exact locations, equipment and parts.
 - b. System shall be complete and include all jacks, faceplates, connectors, cables and electronics as part of this contract.
- C. Room B206 A/V System (substitutions must provide equal or greater performance)
 1. Extron IN1606
 2. Extron IPCP 305
 3. Extron DMP 44 LC

4. Extron XPA 1002
5. Extron TLC 350MV
6. Shure SLX 124/85/SM58
7. FSR CB-22S
8. Chief Projector Plate and Mount
9. Extron HDMI Cables and Faceplates
10. Extron VGA and 3.5 MM Audio Cables and Faceplates
11. Extron MP101D Mic Plate and Cables.
12. Extron FF220T Speakers
13. 4 Gang Decora Faceplate

D. Music Room Sound Equipment

1. Speakers
 - a. EV SX100 with Adjustable Bracket
2. Mobile Cart
 - a. Raxxess ECR-ST
3. Mixer
 - a. Peavey PV14 USB
4. Power Distribution
 - a. Raxxess PD-800L
5. Amplifier
 - a. Peavey IPR 1600
6. Blu Ray Player
 - a. Denon DBP-1611UDP
7. Wireless Mic
 - a. Shure SLX24/SM86
8. Ipod Dock
 - a. Chief NAID1BA
9. Storage Cabinet
 - a. Raxxess
10. Wiring and Cables
 - a. Shielded Cat 5e or greater UTP for audio faceplate cables.
 - b. West Penn 226, or equal, for the loudspeaker cluster circuits.

11. Miscellaneous Connectors
 - a. Provide Neutrik NC3 series “XLR”, Neutrik NP3C “TRS” or Canare F-09 “RCA” connectors.
 - b. Provide Switchcraft N112B connectors.
 - c. Provide crimped or gas-tight terminals for all loudspeaker connections. Wirenuts are not acceptable.
 12. Approved equals must provide equal or greater performance.
- E. Cafeteria A/V Equipment: (substitutions must provide equal or greater performance)
1. Projectors
 - a. Epson PowerLite Pro Z8050WUNL
 - b. Chief Adjustable Projector Pole
 - c. Lens ELPLS04
 - i. Coordinate lens with exact installed location and projection surface.
 2. Televisions
 - a. Sharp 90” LED TV
 - b. Chief Tilting Wall Mount Bracket
 - c. FSR PWB-250 Back Box.
 3. Mobile Lectern with Rack Rails
 - a. Spectrum Link
 - i. Extron Touchlink 710 CV
 - ii. Extron Cable Cubby 600 with Extron jacks
 - iii. Extron UTS 100
 - iv. Extron UTS 150
 - v. Extron MP101
 4. Equipment Cabinet
 - a. Lowell LER-3522 or approved equal
 5. A/V Scaler
 - a. Extron DSC 301 HD
 6. HDMI Audio Deembedder
 - a. Extron HAE 101
 7. Power Supplies
 - a. Extron PS 124
 8. HDMI Switcher

- a. Extron DXP 84 HDMI
9. DSP
 - a. Extron DMP 64
10. HDMI Transmitter
 - a. Extron DTP HDMI 230 Tx
11. HDMI Receiver
 - a. Extron DTP HDMI 230 Rx
12. Controller
 - a. Extron IPCP 505
13. Amplifiers
 - a. Extron XPA 2002 70V
14. Control Panels
 - a. Extron TLP 700CV
15. Wireless Mics
 - a. Shure SLX124/85/58
16. Assistive Listening
 - a. Listen LS-03
17. Speakers
 - a. Extron SI 28W
 - b. Atlas Sound HT327 at each speaker
18. Miscellaneous
 - a. Extron AAP 301
 - b. Extron AAP RCAF-SLDR Silkscreen
 - c. Extron AAP 15HD and 3.5MM
 - d. Extron AAP HDMI, 3.5 MSJ
 - e. Extron Dual AC AAP
 - f. Extron AAP XLR
 - g. Extron RSU 129
 - h. Extron RSU 126 Gray
19. A/V Cables
 - a. Quantities as needed
 - b. Extron recommended A/V cables

- c. Extron HDMI ultra 9'
- d. Extron MVGA 12'
- e. Extron AV RCA 20'
- f. Extron A Mini 20'
- g. Extron MDC HDMI 1.5'
- h. Extron MDC HDMI 3'
- i. Extron ASA 131

F. Auxiliary Gym Equipment (substitutions must provide equal or greater performance)

- 1. DVD/CD Player
 - a. Tascam CD-200i
- 2. Auxiliary Input Switcher
 - a. RDL EZ-HSX4
- 3. Mixer
 - a. Biamp 801i
- 4. Digital Signal Processor
 - a. Biamp Nexia SP
- 5. Power Conditioner
 - a. Lowell SCS8R-ASM
- 6. Equipment Drawer
 - a. Lowell UDEL-214
- 7. Two Channel Amplifier
 - a. Crown XLS1500
- 8. UPS Equipment
 - a. APC 3000 120 VAC Smart Ups
- 9. Wired Microphone
 - a. Shure SM58S
- 10. Podium Microphone
 - a. Shure MX 412/C Gooseneck Podium Microphone
- 11. Microphone Stands
 - a. Atlas TEB-E
- 12. Loudspeakers
 - a. EVI SX300E

13. Wireless Mics
 - a. Shure SLX124/85/SM58
 14. Assistive Listening
 - a. Listen LS-03
 15. Wiring
 - a. Shielded Cat 5e or greater UTP for audio faceplate cables.
 - b. West Penn 226, or equal, for the loudspeaker cluster circuits.
 16. Miscellaneous Connectors
 - a. Provide Neutrik NC3 series “XLR”, Neutrik NP3C “TRS” or Canare F-09 “RCA” connectors.
 - b. Provide Switchcraft N112B connectors.
 - c. Provide crimped or gas-tight terminals for all loudspeaker connections. Wirenuts are not acceptable.
- G. Main Gymnasium A/V Equipment
1. Substitutions must provide equal or greater performance
 2. Equipment Cabinet
 - a. Lowell LER-3522
 - b. Atlas SD4-Drawer
 3. Mixer
 - a. Roland M200i EXP Mixer with Digital Snake
 - b. Roland S-1608 Digital Snake
 - c. Ipad 4 Generation 16 GB
 4. DSP
 - a. Rane Hal 2
 5. Amps
 - a. QSC CMX 500V
 6. Speakers
 - a. Community R.5-99TZ
 - b. Community R.5SUB-T
 - c. QSC K8 Powered Speakers
 7. CD Player
 - a. Tascam CD-200i
 8. Ipod Dock

- a. Chief NAID
9. Switch
 - a. 8 port gigabit switch
10. Wireless Systems
 - a. Shure SLX124/85/SM58
11. Assistive Listening
 - a. Listen LS-03
12. Page Override
 - a. RDL TX-70A
 - b. RDL ST-ACR2
13. Power Sequencer
 - a. Atlas ECS-6RM
14. UPS
 - a. APC 3000VAC 120V
15. Projector
 - a. Panasonic PT-DZ12000
 - b. Lens ET-D75LE6
 - i. Coordinate lens with exact projector, distance and screen at time of construction.
16. Mobile Lectern with Rack Rails
 - a. Spectrum Link
 - i. Extron Touchlink 710 CV
 - ii. Extron Cable Cubby 600 with Extron jacks
17. Video Scaler
 - a. Extron DSC 301 HD
18. Video Transmitter
 - a. Extron DTP 230 Tx
19. Video Receiver
 - a. Extron DTP 230 Rx
20. Video Switcher
 - a. Extron SW4 HDMI
21. Controller
 - a. Extron IPCP 505

22. Wiring and Cables
 - a. Shielded Cat 5e or greater UTP for audio faceplate cables.
 - b. West Penn 226, or equal, for the loudspeaker cluster circuits.
23. Miscellaneous Connectors
 - a. Provide Neutrik NC3 series “XLR”, Neutrik NP3C “TRS” or Canare F-09 “RCA” connectors.
 - b. Provide Switchcraft N112B connectors.
 - c. Provide crimped or gas-tight terminals for all loudspeaker connections. Wirenuts are not acceptable.
 - d. Per Manufacturer’s equipment
 - i. Cat X cable
 - ii. RS-232
 - iii. HDMI
- H. Kitchen Lab Camera Systems (substitutions must provide equal or greater performance)
 1. Ceiling Kit
 - a. Chief CMS440 with Chief CMA470
- I. Video Wall (substitutions must provide equal or greater performance)
 1. Matrix Switcher
 - a. Extron DXP 88 HDMI
 2. Signal Extenders
 - a. Extron DTP 230 Rx and Tx
 3. Cables
 - a. HDMI
 - b. Cat 6 S/FTP
 4. Power Supplies
 - a. Extron PS

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine conditions under which AV cabling and sound enhancement equipment and related components are to be installed in coordination with Installer of materials and components specified in this Section and notify affected Prime Contractors and Design consultant in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected to ensure a safe and timely installation.
 1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Design

consultant written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.

2. Visit Site to identify and become familiar with existing field conditions and specific requirements of each Site.
3. Verify all dimensions in field and confirm condition of existing hardware to be utilized.
4. Confirm space requirements and physical confines of all work areas to ensure that all materials can be installed in indicated spaces.
5. Confirm all outlet locations and cable pathways and advise Design consultant in writing of any discrepancies or issues in Design described in Contract Documents.

3.02 PREPARATION

- A. Protection: Provide adequate protection of equipment and hardware before and after installation.
- B. Existing Communications Services: Ensure all telecommunications systems (voice, video and data) remain operational throughout the project.
 1. Identify any additional outlets, circuits, and wiring at the site not shown on T-Drawings and interfering with installation of specified equipment.
 2. Remove all accessible portions of abandoned communications cabling per NEC 800.52. Tag all communications cabling not terminated at both ends but retained for future use.

3.03 INSTALLATION

- A. Provide and install all components necessary to install complete AV cabling and sound enhancement equipment systems, including (but is not limited to) connectors, electronics, terminators, pass-thrus, cables etc...
 1. Cable runs shall be factory terminated. Splicing of any cable is prohibited
 2. Secure all cables within ceiling cavities to building structure.
 3. Loosely bundle all cables and support from structure at unequal intervals from 5 to 6 feet with spring steel fasteners and cable clip rated for use with high performance cables where cable tray or other support structure has not been provided as indicated on Drawings. All mounting clips shall be seismic type as per BOCA.
 4. Do not violate manufacturer's recommended loadings. Leave 30% capacity for future use of pathway.
 5. Verify all horizontal cable run lengths prior to installation. Ensure cables do not exceed distances that would degrade the signal transmission requirements
 6. Do not support cables from ceiling grid T-Bars, grid wire supports or bridle rings. Do not allow cables to touch ceiling grid.
 7. Install cables in EMT in all unfinished or exposed areas
 8. Do not secure cables with permanent cable ties. Do not tighten cable bundles in such a way as to cause jacket deformation or damage.
 9. Place cables in compliance with TIA/EIA-568.B standards and BICSI recommended methods.
 10. Tight 90-degree bends are unacceptable, and use of plastic "cinch-type" tie-wraps are not permitted, in order to prevent damage to cable jacket and compromise the cable's electrical or optical characteristics.

11. Communications outlets shall be located to be no more than 6 feet from an electrical outlet.

B. Determine allowable cable proximity to other electrical power sources of 480 Volts or less using TIA/EIA-569A "Cabling Pathway Standard" for UTP cable separations from sources of EMI:

1. Minimum separation distance from Power Source at 480 V or less:

CONDITION	<u>< 2kVA</u>	<u>2-5 Kva</u>	<u>> 5 kVA</u>
a. Unshielded power lines or electrical equipment in proximity to open or non-metal pathways	6 in.	12 in.	24 in.
b. Unshielded power lines or electrical equipment in proximity to open or non-metal pathways	3 in.	6 in.	12 in.
c. Power lines enclosed in a grounded metal conduit (or equivalent shielding) in proximity to grounded metal conduit pathway	3 in.	6 in.	12 in.
d. Transformers & Elec. Motors	40 in.	40 in.	40 in.
e. Fluorescent Lighting	12 in.	12 in.	12 in.

C. Install all cable in accordance with National, state and local codes and TIA/EIA Standards, and BICSI methods.

1. Follow manufacturer's guidelines and requirements for all cable termination.

D. Permanently identify all system components following TIA/EIA-606A "Administration Standard for Commercial Telecommunications Infrastructure" with identification format:

1. Identification: Provide permanent identification labels for outlets, faceplates and cables.
2. Each individual cable shall be labeled on both ends of cable terminations regardless of cable intended use. Labels must be machine printed with permanent black ink on laminated white label material. Contractors must check with appropriate school district personnel for appropriate labeling scheme. The intended format and labeling material must be approved by the school district Technology Department before labeling begins.

3.04 TESTING

A. Sound Enhancement System

1. The contractor shall test all aspects of the sound enhancement amp/mixer once it is installed and demonstrate these functions to the owner of owner's representative.
 - a. Speaker levels shall be verified to function individually and as a unit
 - b. Microphones shall be demonstrated to work as intended by the manufacturer.

B. A/V Systems

1. The contractor shall test all aspects of the Audio/Visual Systems once it is installed and demonstrate these functions to the owner of owner's representative.
 - a. Speaker levels shall be verified to function individually and as a unit.
 - b. Video Displays shall be verified to display from all input sources.

- c. Control of the system shall be shown to control all aspects of the systems.
- d. Levels shall be set for all outputs.
- e. EDID and HDCP compliance shall be setup and verified.
- f. Microphones shall be demonstrated to work as intended by the manufacturer.

3.05 AS-BUILTS

- A. As-builts shall be provided by the contractor in hardcopy and electronic CAD format prior to project completion and inspection.
- B. As-builts by contractor must include parts lists and wiring diagrams that clearly indicate all equipment, locations, wiring and connections.
- C. Owner's manuals shall be supplied as part of the as-built documentation.

3.06 DEMONSTRATION AND TRAINING

- A. All aspects of the systems must be demonstrated for the owner at the time of training
- B. A minimum of 16 hours of training shall be provided.
- C. Training shall be video and audio recorder for the owner and turned over to the owner at acceptance.

3.07 ACCEPTANCE

- A. Contractors work shall be considered complete after the following conditions have been met:
 - 1. As-built documentation has been provided and approved.
 - 2. Cable installation is complete and all cable runs have been tested and documented to be installed according to specifications and drawings.
 - 3. Equipment installation is complete and all functions have been tested and documented to function as designed and per the manufacturer's recommendations.
 - 4. All punch list items have been reconciled.
 - 5. All disturbed ceiling panels, fire stopping materials, covers, etc. have been properly reinstalled.
 - 6. All materials and trash have been removed from the site.
 - 7. A 1-Year Installers warranty has been given to a school district Technology representative.
 - 8. Submit Manufacturers Extended Warranty Application.

END OF SECTION

SECTION 27 50 00

INTERCOM AND CLOCKS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. This section and associated drawings define a communications system for an intercom, public address and master clock system. The contractor shall provide all infrastructure, cable, hardware and equipment as defined to provide complete and operational systems.

1.02 SYSTEM DESCRIPTION

A. Design Requirements

1. Intercom/PA/Master Clock System
 - a. The facility intercommunication system shall be a low voltage system that utilizes a fiber backbone and copper cable infrastructure to distribute a user-defined input in a single or bi-directional manner. The system shall be capable of multiple, simultaneous conversations on separate channels throughout the facility through telephones and loudspeaker assemblies.
 - b. A programmable master clock for tone distribution schedule shall also be included as part of the overall system.
 - c. The system shall be microprocessor based and have interconnection with the telephone system installed within the facility. In addition, the system must be expandable to meet the user's future expansion needs and be programmable from a computer terminal located at the facility.
 - d. The clock system shall consist of a master unit and slave clocks. The system shall be wirelessly corrected and have battery powered clocks. All clocks shall be corrected wirelessly to the master clock system.

B. Performance Requirements

1. Rack/Cabinet mountable headend equipment.
2. Announcement distribution from a central location to zones, individual classrooms, groups or all facility speakers.
3. Broadcast of user defined input (radio signal, compact disc, aux input, etc.) to zones, individual rooms, groups or all facility loudspeakers.
4. Emergency cut-in to all speakers in an emergency situation from a central location.
5. Two-way intercommunication between the central rack, any call-in location or any selected two-way speaker location.
6. Hands free communications by means of a loudspeaker or speakerphone used as a transducer or speaker/microphone combination.
7. Visual and audio monitoring of all intercommunication system activity.
8. Volume and level controls for all centrally located intercommunication system equipment.
9. Tone distribution based off the master clock that can be partitioned into zones.

10. Capability to tie into any auxiliary sound system throughout the facility.
11. High priority call-in from any telephone/call switch in an emergency situation.

C. Regulatory requirements

1. All work will conform to the National Electric Code and applicable local ordinances.

1.03 SUBMITTALS

A. Comply with requirements of Division 0 and Division 1 - Submittals and as modified below.

B. Product Data: Submit manufacturer's product literature, technical specifications and similar information for the following items demonstrating compliance with the specified requirements. Any submittal that does not clearly indicate the exact piece of equipment or device shall be rejected at the contractor's expense for resubmittal.

1. Submit the shop drawings, product data and quality control submittals specified below at the same time as the package
2. Shop Drawings shall include the following items but are not limited to:
 - a. Equipment and device quantities and types
 - b. Wire types
 - c. System wiring diagrams showing all connections
 - d. Drawings including all equipment locations
 - e. Associated equipment specifications and cut sheets
 - f. Product data including catalog cut sheets, manufacturer's default specifications, user operation guides and a bill of materials

C. Quality Control Submittal

1. Submit the name, address and telephone number of the nearest fully equipped service organization.
2. Submit a certificate of completion of installation and service training from the system manufacturer.
3. Certificates
 - a. Manufacturer Certification: Submit certification from manufacturer of products to be installed under this contract certifying that Installer is authorized by manufacturer to install specified products.
 - b. Installer Experience Listing: Submit list of at least 5 completed projects as specified below in "Quality Assurance – Qualifications – Installer."

D. Contract Closeout Submittal: Comply with requirements of Division 0, including submission of operating and maintenance instructions as item in "Operation and Maintenance Data" manual described in that Section.

1.04 AS-BUILTS

A. All systems must have as-built drawings provided in electronic CAD and hardcopy format that clearly show all system components, wiring schemes and system interconnections.

1.05 QUALITY ASSURANCE

A. All Work shall be installed in a first class, neat and workmanlike manner by skilled Technicians. The quality of the workmanship shall be subject to inspection and approval by authorized WCPS personnel. Any work found

to be of inferior quality and/or workmanship shall be replaced and/or reworked until the approval of WCPS is obtained.

B. Qualifications

1. Installer

- a. Must be qualified to cable, terminate, install and program the equipment specified in this Section, certified by manufacturer of products to be installed, and completed at least 5 installations of similar size, nature and complexity as specified for this project.
- b. Contractor must maintain a local presence in the State of Delaware. Submit office locations for review.
- c. Contractor must provide proof that service and warranty work can be initiated with a 24 hour time period from a service call.

1.06 WARRANTY

A. Special Warranty: Provide manufacturer's system warranty against electrical or mechanical defects for 1 year from date of final acceptance.

1. **System Assurance:** The System Assurance shall cover the failure of the wiring system to support the application which it was designed to support as well as additional application(s) introduced in the future by recognized standards or user forums
2. **System Certification:** Upon successful completion of the installation and subsequent inspection, the Authority shall be provided with a numbered certificate, from the manufacturing company, registering the installation.

1.07 TRAINING

A. Installing contractor shall provide a minimum of 8 hours of training on system operation and managements as part of their scope of work.

1. Additional hours shall be provided on a time and materials basis at the request of the owner.

B. Installing contractor shall provide a video recording on a standard format DVD to the owner which includes training sessions.

1.08 OPERATION AND MAINTENANCE MANUALS

A. Installing contractor shall provide a minimum of two hardcopy and one electronic copy of all operation and maintenance manuals to the owner at project completion.

B. All passwords and software must be included for the system.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable manufacturers

1. The intercom and clock systems shall be manufactured by a reputable manufacturer with a proper support and maintenance operation in place.
 - a. Bogen (Basis of Design)
 - b. Valcom

- c. Simplex
- d. Or approved equals.

2.02 MATERIALS

A. CONSOLE

- 1. Rack-mounted equipment shall be Bogen Model TCPER
 - a. 77" Rack

B. MCRMP / MCMP / QRC24-48 (Compact Rack System)

- 1. Rack Mount full, Mini-System, or Wall Mount panel. Shall include the following components:
 - a. Quantum Processor Card QSPC1
 - b. Analog Card
 - c. Station Card
 - d. Telephone Interface Card
 - e. 5 volt / 12 volt Power Supply
 - f. 26 volt Power Supply(s)
 - g. Audio Program Module Interface Assembly

C. MCRMF / MCMF / QRC24-48

- 1. MCRMF Rack mounting mainframe. Includes built-in ventilation fans and the following circuit cards:
 - a. Quantum Processor Card
 - b. Analog Card
 - c. Station Card
 - d. Telephone Interface Card
 - e. Ribbon Cable Assembly
- 2. MCF Wall Mount mounting mainframe. Utilizes convection cooling and the following circuit cards:
 - a. Quantum Processor Card
 - b. Analog Card
 - c. Station Card
 - d. Telephone Interface Card
- 3. QCR24 / QCR48 Compact Quantum Rack System Mainframe (1 per Mini-System). Includes built-in ventilation fan and the following circuit cards:
 - a. Quantum Processor Card
 - b. Analog Card

- c. Station Card
 - d. Telephone Interface Card
- D. MCRRP / MCRRC / MCRC
 - 1. Relay Module/Card
- E. MCRCA
 - 1. Ribbon Cable Assemblies
- F. Program Sources
 - 1. Tape Player & AM/FM Tuner
 - 2. 5-Disc CD Player
 - 3. AM/FM Tuner
 - 4. Desktop Paging Microphone
- G. Power Amplifiers
 - 1. 60-Watt Amplifier
 - 2. 125-Watt Amplifier
 - 3. 250-Watt Amplifier
- H. Station Equipment
 - 1. Administrative Display Phone
 - 2. Administrative VoIP Phone
 - 3. Administrative Wall-Mount Phone
 - 4. Administrative Desktop Phone
 - 5. Secure Call - Call Assurance Call-in Switch
 - 6. Call switch with Privacy
 - 7. Rocker-style Call Switch
- I. Optional Equipment
 - 1. Telephone Access Card
 - 2. Telemedia Control Unit
 - 3. Television Control Unit
 - 4. Handheld Infrared Transmitter
- J. Administrative Phone
 - 1. Admin phones shall be one of the following Bogen Model(s)
 - a. MCDS4 – Administrative Display Phone

- b. QSIP1 – Administrative VoIP Phone (Desk or Wall)

K. Call Staff Stations

- 1. Staff Stations shall be Bogen Model:
 - a. SC1 – Secure Call - Call Assurance Call-in Switch
 - b. CA21B – Call Switch with Privacy

L. Intercom System Speakers

- 1. Classroom Speakers shall be Bogen:
 - a. Ceiling Speakers: CSD2X2 Drop-In Ceiling Speakers
 - b. Wall Speakers: MB8TSQ/SL Metal Box Speakers
- 2. Hallway Speakers shall be Bogen:
 - a. Ceiling Speakers: CSD2X2 Drop-In Ceiling Speakers
 - b. Wall Speakers: MB8TSQ/SL Metal Box Speakers
- 3. Outdoor / Gym / Locker Room Speakers shall be Bogen:
 - a. FMH15T mounted in BBSM6 surface-mounted vandal-resistant enclosure/BBFM6 flush-mounted vandal-resistant enclosure with FMHAR8 adapter ring and SGHD8 heavy duty grille
 - b. KFLDS30T Wide Dispersion Reentrant Horn Loudspeakers
- 4. Common Area Speakers shall be Bogen:
 - a. HFCS1 High-Fidelity Ceiling Speakers
 - b. OCS1 NEAR Orbit Ceiling Speakers
 - c. OPS1 NEAR Orbit Pendent Speakers

M. Master Clock

- 1. The system shall be a Bogen BCMA 3000 based system.
- 2. The system shall provide for automatic clock correction for Daylight Savings Time, Spring Ahead/Fall Back. Daylight savings shall not require the use of any user input at the time of daylight savings.
- 3. The master clock system shall support a minimum of 16 schedules and 1536 events as outlined in the Intercom/PA Features section.
- 4. The system shall support Electronic Message Displays. These displays are integral to the emergency notification needs of the facility. Locate an emergency message display within the main office.
- 5. In the event of an Emergency Call from a classroom, the origin of the Emergency Call is displayed on multiple Electronic Message Displays, giving the opportunity for school staff to respond more quickly. In addition, a console or room telephone has the ability to activate a specific message for display on a group of EMDs. This allows an emergency procedure such as school “lock down” to be activated from any telephone, quickly and efficiently.

N. Clocks

1. Clocks shall be Bogen BCAL-2 battery powered, wirelessly corrected clocks. Bogen 12" and 16" surface, round clocks.
 - a. All clocks shall be corrected via RF.
- O. Accessories
 1. Bogen Repeater where signal strength is not adequate from the clocks.
- P. Corridor Clocks
 1. Double faced Slave clock where indicated from Bogen
- Q. SPARE CAPACITY/SYSTEM EXPANSION
 1. The contractor shall include extra circuits for staff telephones and loudspeakers built into the system for future expansion. Contractor shall provide and install fifteen percent (25%) extra circuitry (line cards, expanders, etc.) for these devices. The Owner shall add only field instruments (telephones and loudspeakers), cabling, and programming to make these extra capacity circuits fully operational.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine conditions under which telecommunications cabling and equipment and related components are to be installed in coordination with Installer of materials and components specified in this Section and notify affected Prime Contractors and Design consultant in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected to ensure a safe and timely installation.
1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Design consultant written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.
 2. Visit Site to identify and become familiar with existing field conditions and specific requirements of each Site.
 3. Verify all dimensions in field and confirm condition of existing hardware to be utilized.
 4. Confirm space requirements and physical confines of all work areas to ensure that all materials can be installed in indicated spaces.
 5. Confirm all device locations and cable pathways and advise Design consultant in writing of any discrepancies or issues in Design described in Contract Documents.

3.02 PREPARATION

- A. Protection: Provide adequate protection of equipment and hardware before and after installation.
- B. Existing Communications Services: Ensure all telecommunications systems (voice, video and data) remain operational throughout the project.
1. Identify any additional intercom equipment, devices, and wiring at the site not shown on T-Drawings and interfering with installation of specified equipment.
 2. Remove all accessible portions of abandoned communications cabling per NEC 800.52. Tag all communications cabling not terminated at both ends but retained for future use.

3.03 INSTALLATION

- A. Provide and install all components necessary to install complete intercom/PA/master clock system, including (but is not limited to) cable, connectors, patch panels, call switches, speakers, etc...
- B. Secure all horizontal cables within ceiling cavities to building structure.
1. Loosely bundle all cables and support from structure at unequal intervals from 5 to 6 feet with spring steel fasteners and cable clip rated for use with high performance cables (similar to Caddy Series "CableCat" or approved alternate mounting methods) including placement in cable tray as indicated on Drawings. All mounting clips shall be seismic type as per BOCA.
 2. Do not violate manufacturer's recommended loadings. Leave 30% capacity for future use of pathway.
 3. Verify all horizontal cable run lengths prior to installation. Re-distribute horizontal cabling to maintain distance requirements and maintain pathway route accessibility.
 4. Do not support cables from ceiling grid T-Bars, grid wire supports or bridle rings.
 5. Do not allow cables to touch ceiling grid.
 6. Install cables in EMT conduit in all unfinished, exposed areas as shown in Design consultant roof plans and/or T-Drawings, unless alternate pathways are noted.
 7. Do not secure cables with permanent cable ties. Do not tighten cable bundles in such a way as to cause jacket deformation or damage.
 8. Place cables in compliance with TIA/EIA-568.B standards and BICSI recommended methods.
 9. Re-terminate and re-test any cables or pairs of cables failing end-to-end testing requirements. Replace any faulty cables/pairs or termination devices. Remove all defective cables completely from pathways.
- C. Install all exposed cabling in surface raceway by Wiremold, Hubbell or Panduit where in-wall conduit has not been provided. Follow all manufacturers' guidelines requirements regarding bending radius and slack. All bends, offsets and fittings shall be appropriately sized to provide 30% capacity after installation.
- D. Install all cable in accordance with National, state and local codes and TIA/EIA Standards, and BICSI methods.
1. Follow manufacturer's guidelines and requirements for all cable termination.
 2. Follow detail drawings to locate equipment racks and cabinets. Where it is necessary to deviate, to obtain 30-inch clearance between equipment, obtain Design consultant's written approval before mounting cabinet/rack.
 3. Ladder-type cable tray shall be affixed 6 inches above all data racks and equipment cabinets, and routed to all points of entry into each telecommunications room.
 - a. Include transition to proper height for penetration into hallway or other wall penetration as indicated on Drawings.
 - b. Install sufficient 4-inch conduits from telecom rooms into hallway (minimum of 2) with protective insulating bushings, cable spillway or specially designed cable tray sections, with appropriate firestop materials.

E. Properly terminate all cables at speakers, call switches, administrative consoles and distribution racks. Permanently identify all cables in pullboxes, transition points, and termination points by affixing pre-marked self-adhesive wraps similar to Brady "B-500+ Plastic Cloth Markers."

F. Permanently identify all system components following TIA/EIA-606A "Administration Standard for Commercial Telecommunications Infrastructure" with identification format:

1. Identification: Provide permanent identification labels for end devices and associated cabling at each end.

3.04 TESTING

- A. Intercom devices shall be tested and verified.
- B. Sound levels shall be verified and tapped correctly.
- C. The clock system shall be verified to function and keep correct time.
- D. Interaction between the Clock and Intercom System shall be verified.

3.05 AS-BUILTS

- A. As-builts shall be provided in hardcopy and electronic CAD format prior to project completion and inspection.
- B. As-builts must include parts lists and wiring diagrams that clearly indicate all equipment, locations, wiring and connections.
- C. Owner's manuals shall be supplied as part of the as-built documentation.

3.06 DEMONSTRATION AND TRAINING

- A. All aspects of the systems must be demonstrated for the owner at the time of training
- B. A minimum of 16 hours of training shall be provided.
- C. Training shall be video and audio recorder for the owner and turned over to the owner at acceptance.

3.07 ACCEPTANCE

- A. Contractors work shall be considered complete after the following conditions have been met:
 1. Cable installation is complete and all cable runs have been tested and documented to be installed according to specifications and drawings.
 2. Equipment installation is complete and all functions have been tested and documented to function as designed and per the manufacturer's recommendations.
 3. All punch list items have been reconciled.
 4. All disturbed ceiling panels, fire stopping materials, covers, etc. have been properly reinstalled.
 5. All materials and trash have been removed from the site.
 6. A 1-Year Installers warranty has been given to a school district Technology representative.
 7. Submit Manufacturers Extended Warranty Application.

END OF SECTION

SECTION 28 10 00

INTRUSION AND ACCESS CONTROL SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Intrusion Detection cabling
- B. Intrusion Detection sensors
- C. Intrusion Detection end devices
- D. Intrusion Detection headend equipment
- E. Access Control Hardware
- F. Card Readers
- G. Associated Cabling
- H. Access and Intrusion Servers and Software
- I. Associated power supplies, terminations, equipment, labeling and associated cable performance testing.

1.02 DEFINITIONS

- A. Intrusion Detection system refers to burglar alarm equipment including motion detectors, door contacts, control panels, communication panels, power supplies, expansion modules and associated wiring.
- B. Access Control system refers to card readers, cabling, electronics, access cards and system database to allow or prevent access to the facility.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements
 - 1. Provide labor, materials, equipment, services and operations required for a complete installation an Intrusion Detection System.
 - a. Base panel
 - b. Expansion modules
 - c. Keypads
 - d. Annunciators
 - e. Motion Detectors
 - f. Door Contacts
 - g. Communication Modules
 - h. Power Supplies
 - i. Controllers
 - j. Card Readers

- k. Servers
- l. Application Software
2. All wiring shall be wired according to manufactures specifications.
 - a. Refer to notes on each drawing to determine exact installation methods.
 - b. Strictly adhere to most current version of TIA/EIA Telecommunications cabling standards.
 - c. Permanently identify and label all cables and termination devices, at distribution rack and workstation in accordance with ANSI TIA/EIA-606 Standard or as agreed by Design consultant and Authority.
 - d. Remove and replace any cables failing to meet end-to-end testing requirements; do not abandon cable in place. All cable shall be terminated at both ends, unless noted in T-Drawings.
- B. Performance Requirements
 1. The system shall produce a signal if the system is breached by an unauthorized user.
 2. Each sensor shall be individually alarmed.
 3. The system shall be capable of a minimum of 8 partitions.
 4. The system shall be capable of being scheduled.
 5. The system shall be capable of being controlled from the main panel, keypad locations, central station and PC connected to the LAN.
 6. The intrusion detection system will alert and record movement throughout the facility that is both authorized and unauthorized.
 7. The systems will be capable of communicating onsite as well as to remote locations.
 8. The systems shall be controllable in case of emergency situation.
 9. All systems shall operate on dedicated circuits with associated cabling in EMT.
 10. Comply with applicable requirements in Local, State and Federal Codes, TIA/EIA Standards, and BICSI methodology.
 11. Specified cabling system derived from recommendations in approved telecommunications industry codes, standards and methods, including the following documents:
 - a. Articles 250, 725, 760, 770, 800,810 and 820 of the current National Electrical Code.
 - b. ANSI/TIA/EIA-568-B.1: Commercial Building Telecommunications Cabling Standard Part 1 – General Requirements
 - c. ANSI/TIA/EIA-568-B.2: Commercial Building Telecommunications Cabling Standard Part 2 – Balanced Twisted Pair Cabling Components and subsections.
 - d. ANSI/TIA/EIA-568-B.3: Commercial Building Telecommunications Cabling Standard Part 3 – Optical Fiber Cabling Components
 - e. ANSI/TIA/EIA-569-A: Commercial Building Standard for Telecommunications Pathways and Spaces

- f. ANSI/TIA/EIA-606: Administration Standard for Telecommunications Infrastructure of Commercial Buildings
- g. ANSI/TIA/EIA-607: Commercial Building Grounding and Bonding Requirements for Telecommunications
- h. BICSI Telecommunications Distribution Methods Manual (TDMM), 12th Edition
- i. National Fire Protection Agency (NFPA-70): National Electrical Code (NEC)

1.04 SUBMITTALS

- A. Comply with requirements of Division 0 and Division 1 - Submittals and as modified below.
- B. Product Data: Submit manufacturer's product literature, technical specifications and similar information for the following items demonstrating compliance with the specified requirements.
 - 1. Motion Detectors, Door Contacts, Keypads
 - 2. Headend Control Panels and Communications Modules
 - 3. Power supplies
 - 4. Copper cable and termination devices.
 - 5. Inner duct and accessories.
 - 6. Wiring diagrams.
 - 7. Card Readers
 - 8. Controllers
 - 9. Servers
- C. Samples: Provide samples of assemblies and connections as described below, prior to installation, for approval by designer.
 - 1. Intrusion Detection cables and connections – Submit samples of cables and terminations to be provided including following components and characteristics:
 - a. Provide all components in colors selected by Design consultant.
- D. Quality Control Submittal
 - 1. Test Reports: Submit complete sample test data and reports with exact labels used on cables termination fields.
 - 2. Certificates
 - a. Manufacturer Certification: Submit certification from manufacturer of products to be installed under this contract certifying that Installer is authorized by manufacturer to install specified products.
 - b. Installer Experience Listing: Submit list of at least 5 completed projects as specified below in "Quality Assurance – Qualifications – Installer."
- E. Contract Closeout Submittal: Comply with requirements of Division 0, including submission of operating and maintenance instructions as item in "Operation and Maintenance Data" manual described in that Section.

1.05 QUALITY ASSURANCE

- A. All Work shall be installed in a first class, neat and workmanlike manner by skilled Technicians. The quality of the workmanship shall be subject to inspection and approval by authorized school district personnel. Any work found to be of inferior quality and/or workmanship shall be replaced and/or reworked until the approval of school district personnel is obtained.
- B. Qualifications
1. Installer
 - a. Qualified to cable, terminate, program and test Intrusion Detection systems, and associated power wiring specified in this Section and other Division 27/28 series specifications, certified by manufacturer of products to be installed, and completed at least 5 installations of similar size, nature and complexity as specified for this project.
 - b. Contractor must maintain a local presence in the State of Delaware. Submit office locations for review.
 - c. Contractor must provide proof that service and warranty work can be initiated with a 24 hour time period from a service call.
- C. Conditions for Consideration of "Or Equal" Products: Where products are specified by name and accompanied by the term "or equal", the proposed "or equal" product will be considered when the following conditions are satisfied. If all the following conditions are not satisfied, Design Consultant will return requests without action, except to record noncompliance with these requirements:
1. Proposed product does not require extensive revisions to the Contract Documents.
 2. With the exception of the product name or number and manufacturer's name, proposed product conforms with requirements indicated on the Drawings and in the Specifications in every respect and will produce indicated results.
 3. Proposed product is fully documented and properly submitted.
 4. Proposed product has received necessary approvals of authorities having jurisdiction.
 5. Proposed product is compatible with AND has been coordinated with other portions of the Work.
 6. Proposed product provides specified warranty.
 7. If proposed product involves more than one contractor, proposed product has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 8. Submission is accompanied with detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 9. Submission is accompanied with a list of similar installations for completed projects with project names and addresses and names and addresses of design consultants and authorities, if requested.
 10. Submission is accompanied with proposed product's Manufacturer signed written statement on Manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents.

1.06 WARRANTY

- A. Installer's Warranty: Provide manufacturer's system warranty against electrical or mechanical defects for 1 year from date of final acceptance.

1. The contractor shall revisit the system programming/zoning with the owner at the end of the 1 year warranty period and provide any programming/adjustments necessary required from the owner.

B. Manufacturer warranty coverage for cable systems associated with the Intrusion Detection System and associated Access Control System.

1.07 TRAINING

A. Installing contractor shall provide a minimum of 8 hours of training on system operation and managements as part of their scope of work.

1. Additional hours shall be provided on a time and materials basis at the request of the owner.

B. Installing contractor shall provide a video recording on a standard format DVD to the owner which includes training sessions.

1.08 OPERATION AND MAINTENANCE MANUALS

A. Installing contractor shall provide a minimum of two hardcopy and one electronic copy of all operation and maintenance manuals to the owner at project completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Intrusion Detection

1. Basis of Design – DMP

a. Acceptable Manufacturers

i. Bosch

ii. GE

iii. DSC

iv. Or approved equal

B. Access Control

1. Basis of Design –Red Cloud

a. Acceptable Manufacturers

i. Software House

ii. Amag

iii. GE

iv. S2

v. Honeywell

vi. Or Approved equal

C. Entry Door Video Intercom

1. Basis of Design – AIPHONE

- a. Acceptable manufacturers
 - i. Viking
 - ii. Or Approved equal
2. Any system component not meeting the design and performance criteria will be rejected.

2.02 ACCESS CONTROL

A. Access Control Server

1. Red Cloud Enterprise Server

B. Access Control Panel

1. Red Cloud EP2500

C. Access Control Door Controller

1. Red Cloud MR51e

D. Access Control Card Reader

1. HID RP40 iClass Reader

E. Access Control Cabling

1. Cat 6 UTP
2. Cabling per manufacturer's specifications.

F. The system shall provide a method for users to remotely access the system and perform all of the functions possible on an operator terminal by LAN (IP). Provide Cat 6 cable and associated connections to school's data network. Install associated system software on all administrative and custodial office computers (pc's) for controlling and monitoring system. Turn over software disc to owner after installations.

G. System Requirements

1. Furnish and install all system equipment including, but not limited to, the following:
 - a. Access Power Controller, for interface with school's fire alarm panel.
 - b. Network Interface Module, for IP network link communications.
 - c. Card readers with LED, indoor/outdoor design.
 - d. Access Card, quantity of one-hundred (100).
 - e. Power supply. Quantity as required to support system.
 - f. Standby batteries. Quantity as required to support system for specified hours upon loss of power. It is the responsibility of contractor to coordinate with other trades to fulfill this requirement regardless if shown on contract drawings (electrical drawings).
2. Each door associated with card reader shall be equipped and wired to control panels with:
 - a. Request-to-exit Sensor if door hardware does not provide lock release.
 - b. Push-to-exit Pushbutton where required based on lock types.

3. Contractor shall be responsible for form, fit, function, and coordination of all part numbers listed above, and bring to owner's attention any changes or substitutions for approval.
- H. Indoor/outdoor card readers shall be recessed. No exposed conduit shall be used.
- I. All magnetic locks shall have built-in SPDT relay contact output that changes state when the lock is reporting secure.
- J. All doors except for main entry shall be initially programmed in the lock mode. They are only to unlock when proximity card is used, or manually overridden, or request to exit activated, or fire alarm activates.
- K. Wiring:
 1. Provide Allied True Color products, or equal. All junction boxes are to be painted green to match conduit. All wiring shall be concealed. No surface metal raceway shall be used unless approved by owner, and if approved, shall be painted to match adjacent wall color.

2.03 INTRUSION DETECTION

- A. DMP Intrusion Panel.
 1. The communications format shall be a standard format to allow reporting of individual point numbers and text and other expanded diagnostic reports.
- B. Remote Access
 1. The system shall provide a method for users to remotely access the system and perform all of the functions possible on an operator terminal by LAN (IP). Provide network interface module and Cat 5e cable and associated connections to school's data network.
- C. System Design and Operation
 1. Primary Control Unit: Control unit shall consist of a power supply, signal processing circuitry, tamper circuits, alarm relay and driver circuits. Solid state, modular construction of the control unit must be incorporated for quick and easy servicing.
 2. The system shall be installed so that 10 percent future area protection of each zone may be added without compromising system performance in any way and no additional control equipment is necessary.
 3. Sensor zones shall be defined the same as school's fire alarm area zones.
 4. The system shall be continuously supervised by a tamper circuit to prevent defeat by cutting, jumping or shorting to ground one or more transducer lines. When the system is in the armed mode of operation or in the stand-by mode of operation, attempts at tampering will activate a remote trouble unit.
 5. All zone controls shall be tamperproof installations so that tampering with a zone control will activate the remote trouble module.
 6. The system shall operate from 120 volts, 60 Hz power under normal conditions. In the event of a power interruption, the system will automatically operate off of a self-contained emergency D.C. power source located within the control cabinet. When normal A.C. power is restored, the system shall resume normal operation. Under no circumstance will interruption of A.C. power cause the system to generate false alarms or fail to operate.
 7. Arming and disarming shall be controlled by keypads.

8. The system shall include the LCD readout style annunciator sensor zone and every hardwired door zone as indicated on the drawings.
9. A system operating keypad shall be a part of the annunciator. The keypad shall override the main arm/disarm clock.
10. System shall have ENTRY AND EXIT time of 60 seconds, and keypads shall sound audible tone during ENTRY AND EXIT.

D. Components

1. Control Panel: DMP XR500n with network interface module.
 - a. The control shall have a minimum of eight programmable areas (partitions) and eight on-board points of protection. Points can be assigned to any one of the eight areas. Points can be assigned in any order - numerical sequence is not important. Points can be reassigned to a different area without changing the point number.
 - b. Panel shall have 500-event memory.
 - c. Panel shall contain a minimum of 128 programmable relays for remote reporting functions.
 - d. Each device that goes into alarm shall report on an individual basis to the Maintenance Office's computer.
 - e. Panel shall monitor a minimum of 246 individually identifiable points and have 250 pass codes.
 2. Provide panel with, but not limited to, the following accessories:
 - a. Keypads
 - i. DMP Aqualite Series keypads
 - ii. Locations indicated on drawings
 - b. battery charger module
 - c. Addressable expansion modules, qty as required
 - d. relay modules (Form C relays)
 - e. modules, qty as required
 - f. Standby batteries. Quantity as required to support system for specified hours upon loss of power. It is the responsibility of contractor to coordinate with other trades to fulfill this requirement regardless if shown on contract drawings (electrical drawings).
 - g. Telephone cords, qty as required
 - h. Telephone line switcher, qty as required
 - i. Transformer, qty as required
- E. The control panel shall have provision to send a signal to the building's intercom system when armed. The control panel shall have provision to send a different signal to the intercom system when in alarm.
- F. When the security alarm system is first armed, a voice warning shall announce, via interior public address speakers, that the alarm system has been armed and continually announce the time the occupants have to leave the building or disarm the system (a maximum of five [5] minutes). If alarm system is disarmed, voice warning shall shut down immediately.

- G. All security alarm outputs shall generate a two-minute voice alarm, warning intruder(s) that the police have been notified, using interior public address speakers.
- H. Passive Infrared Motion Detectors:
 - 1. Units shall be DMP PIR detectors
 - 2. Shall be wall mounted with Gimbal mounts with built-in interface. See drawings for locations.
 - a. Standard devices shall have a standard range of 50 feet x 50 feet.
 - b. Long Range devices shall have a range of 100 feet x 40 feet.
 - 3. All devices shall be individually addressable.
 - 4. Damage Stoppers (wire guards): Safety Technology International, STI series. Provide for all devices in gym, locker rooms, and other high abuse areas noted on drawings.
- I. Magnetic Door Contacts:
 - 1. Recessed – GE 1072
 - 2. Surface Mount – GE 2505
 - 3. Roll Up door – GE 2202
- J. Alarm Reporting Device:
 - 1. Interface security system to external digital communicator/dialer, refer to drawing(s) for additional requirements.
 - 2. Panel shall be capable of arming and disarming by a maintained relay contact.
- K. Cable/Wiring
 - 1. Provide Allied True Color products, or equal. All junction boxes are to be painted white to match conduit. All wiring shall be concealed. No surface metal raceway shall be used unless approved by owner, and if approved, shall be painted to match adjacent wall color.
 - a. General: 18-AWG, 4-wire, unshielded, plenum rated. Provide two (2) cable loops for connection of all devices. Alternate connection of devices between cable loops such that every other device in series is connected to one cable and the other cable is connected to every other device remaining. Cable shall be plenum rated West Penn Model 25244, or approved equal.
 - 2. Surge Protection: Provide transient surge protection devices on the power feeds for all major components of equipment. This shall include equipment with electronic components such as the control panel. Surge protection devices shall be UL listed, equal to Transtector or Isobar. The devices shall have a 5 nanosecond or less response time for clipping excessive voltage. The surge protection devices shall consist of solid state circuitry, will automatically reset after an operation with no degradation in protective capability and have an indicated light to indicate when the unit is non-operational. Devices shall be direct plug-in type, plug strip type, or hard-wired connection type as applicable.

2.04 ENTRY DOOR VIDEO INTERCOM

- A. AIPHONE Exterior Station
 - 1. IS-DVF-HID-I
 - 2. SBX-ISDVFP

- B. AIPHONE Interior Station
 - 1. IS-MV
- C. AIPHONE Controller
 - 1. IS-CCU
- D. AIPHONE Power Supplies
 - 1. IS-PU-UL
- E. AIPHONE Wiring
 - 1. CAT 6 Cables (See SECTION 27 10 00)
 - 2. Two Conductor for Door Hardware

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine conditions under which Intrusion Detection cabling and equipment and related components are to be installed in coordination with Installer of materials and components specified in this Section and notify affected Prime Contractors and Design consultant in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected to ensure a safe and timely installation.
 - 1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Design consultant written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.
 - 2. Visit Site to identify and become familiar with existing field conditions and specific requirements of each Site.
 - 3. Verify all dimensions in field and confirm condition of existing hardware to be utilized.
 - 4. Confirm space requirements and physical confines of all work areas to ensure that all materials can be installed in indicated spaces.
 - 5. Confirm all outlet locations and cable pathways and advise Design consultant in writing of any discrepancies or issues in Design described in Contract Documents.

3.02 PREPARATION

- A. Protection: Provide adequate protection of equipment and hardware before and after installation.
- B. Existing Intrusion Detection Equipment: Ensure all systems remain operational throughout the project.
 - 1. Identify any circuits and/or wiring at the site not shown on T-Drawings and interfering with installation of specified Equipment.
 - 2. Remove all accessible portions of abandoned communications cabling per NEC 800.52. Tag all communications cabling not terminated at both ends but retained for future use.

3.03 INSTALLATION

- A. Provide and install all components necessary to install a complete Intrusion Detection System, including (but is not limited to) connectors, sensors, panels, power supplies, terminators, etc...
 - 1. Cable runs shall be per manufacturer's recommendations in all cases. Any deviation will result in system rejection.
 - 2. Secure all horizontal cables within ceiling cavities to building structure.
 - 3. Loosely bundle all cables and support from structure at unequal intervals from 5 to 6 feet with spring steel fasteners and cable clip rated for use with high performance cables where cable tray or other support structure has not been provided as indicated on Drawings. All mounting clips shall be seismic type as per BOCA.
 - 4. Do not violate manufacturer's recommended loadings. Leave 30% capacity for future use of pathway.
 - 5. Do not support cables from ceiling grid T-Bars, grid wire supports or bridle rings. Do not allow cables to touch ceiling grid.
 - 6. Install cables in EMT conduit in all unfinished, exposed areas as shown in Design consultant and Architectural roof plans and/or T-Drawings, unless alternate pathways are noted.
 - 7. Do not secure cables with permanent cable ties. Do not tighten cable bundles in such a way as to cause jacket deformation or damage.
 - 8. Place cables in compliance with TIA/EIA-568.B standards and BICSI recommended methods.
 - 9. Tight 90-degree bends are unacceptable, and use of plastic "cinch-type" tie-wraps are not permitted, in order to prevent damage to cable jacket and compromise the cable's electrical or optical characteristics.
 - 10. Cable bundles shall be neatly routed with a service loop to provide 10 feet of slack at the cross-connect end and as noted in the T-drawings. Cable bundles shall be secured using only black Velcro cable wraps.
- B. Install all exposed cabling in surface raceway by Wiremold, Hubbell or Panduit where in-wall conduit has not been provided. Follow all manufacturers' guidelines requirements regarding bending radius and slack. All bends, offsets and fittings shall be appropriately sized to provide 30% capacity after installation.
- C. Install all cable in accordance with National, state and local codes and TIA/EIA Standards, and BICSI methods.
 - 1. Follow manufacturer's guidelines and requirements for all cable termination.
 - 2. Identification: Provide permanent identification labels for patch panels, access panels and entrance facilities.

3.04 TESTING

- A. Intrusion Detection, Access Control and Entry Systems
 - 1. Upon completion of work, all parts of the systems installation shall be tested by the installing Contractor and demonstrated free of any defects. Preliminary testing will be permitted but shall not be accepted in lieu of obtaining final test results. Final test results shall be accomplished by the use of proper test equipment for the system being tested.
 - 2. Each device shall be demonstrated to individually alarm and pin point the exact triggered sensor. Any system failing this requirement will be wholly rejected at the contractor's expense.

3. All card reading equipment shall be demonstrated to function to manufacturer's specifications.
4. The video phone entry system shall be verified to be operation and perform to manufacturer's specifications.
5. Re-terminate and re-test any cables or pairs of cables failing end-to-end testing requirements. Replace any faulty cables/pairs or termination devices. Remove all defective cables completely from pathways.

3.05 AS-BUILTS

- A. All devices shall be shown in their accurate location
- B. All equipment and cables shall be properly identified and labeled.
- C. Accurate as-built drawings shall be provided in electronic and hard copy format.
 1. 3 copies of electronic (CAD) drawings shall be distributed on appropriate media: 1 to construction management, 1 to designers and 1 to school district personnel.
 2. 3 hard copies of CAD drawings shall be plotted on full size sheets and test results of every installed cable have been given to the construction management for appropriate distribution.

3.06 DEMONSTRATION

- A. Access, Intrusion and Video Entry Systems Demonstration
 1. 16 Hours of demonstration and training on all aspects of the completely installed systems must be provided for the owner.
 - a. Training shall be video recorded for the owner and given to them after acceptance.
 - b. Training and system demonstration must include all aspects of the system and its operation.
 - c. Additional training, beyond the initial 16 hours, shall be provided for the owner at their request on an hourly rate basis.

3.07 ACCEPTANCE

- A. Contractors work shall be considered complete after the following conditions have been met:
 1. Cable and equipment installation is complete and all cables and equipment have been tested and documented to be installed according to specifications and drawings. Use form at the bottom of this specification for zone descriptions and delineation.
 2. A school district Security and Technology representative has successfully tested the "LIVE" system.
 3. All punch list items have been reconciled.
 4. All disturbed ceiling panels, covers, etc. have been properly reinstalled.
 5. All materials and trash have been removed from the site.
 6. A 1-Year Installers warranty has been given to a school district Security and Technology representative.
 7. Submit Manufacturers Extended Warranty Application.

END OF SECTION

SECTION 28 20 00

VIDEO SURVEILLANCE SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Video Surveillance Cabling (Plenum Rated)
2. Video Surveillance Hardware, Cameras and Components
3. Video Surveillance Servers
4. Video Surveillance Network Video Recorders
5. Video Surveillance Workstations
6. Video Surveillance Software
7. All materials, terminations, equipment, labeling and associated cable performance testing.

1.02 DEFINITIONS

- A. Refer to Division 27 for applicable definitions and terms.
- B. CCTV and video surveillance refer to the same system and are used interchangeably. Terms refer to cabling system included in this specification section.

1.03 SYSTEM DESCRIPTION

A. Design Requirements

1. Provide a complete IP based video surveillance system.
 - a. System shall utilize IP cameras, CAT 6 UTP cabling connected to CAT 6 patch panels.
 - b. Patch panel shall be connected to the LAN via POE switches and multimode backbone fiber.
 - i. Each new switch shall have dedicated strands of backbone multimode fiber connected to the chassis switch at the school.
 - c. Servers and workstations shall reside on the LAN and be accessible via the TCP/IP network locally and remotely.
 - d. Headend equipment shall be located in the main telecom room.
 - e. Antivirus software shall be loaded and active on the selected server equipment.
2. Provide labor, materials, equipment, services and operations required for complete installation of LAN compatible Category 6 copper horizontal (camera) wiring.
 - a. All horizontal UTP wiring employs a star topology.
 - i. Category 6 UTP wiring terminates in Category 6 RJ-45 male connector jack at cameras location and on Category 6 rack-mounted patch panel dedicated for security cameras in telecommunications room. Connections wired per TIA/EIA-568A.
 - b. Network cables routed from distribution racks throughout building as shown on T-Drawings.

- i. Note and record all cable lengths to the nearest foot.
 - ii. Replace any UTP cable exceeding 90 meters (295 feet) and route to reduce length to a minimum of 90 meters. Complete all cable rerouting for compliance at no additional cost to Authority.
 - iii. Replace any cable not meeting industry standards for Cat 6 cables.
 - iv. Identify to Design consultant prior to installation of any UTP cables that cannot be reduced to 90 meters or less in total length (rise and run).
 - v. Strictly adhere to most current version of TIA/EIA Telecommunications cabling standards.
 - c. Category 6 rated RJ-45 type connectors with all four copper pairs terminated and tested in accordance with EIA 568B wiring standard.
 - d. Permanently identify and label all cables and termination devices, at distribution rack and workstation in accordance with ANSI TIA/EIA-606 Standard or as agreed by Design consultant and Authority.
 - e. Remove and replace any cables failing to meet end-to-end testing requirements; do not abandon cable in place. All cable shall be terminated at both ends, unless noted in T-Drawings.
3. Fiber Optic Strands (Plenum Rated)
- a. 50 Micron Multimode Fiber Optic Strands: Ultra rated to 10 Gbps, fiber optic cable with 50/125 μm core/cladding diameters, 900 mm buffer.
 - i. Standards
 - (a) Meeting NEC, Article 770 – Optical Fiber Cables and Raceways and passed UL 910 flame test.
 - (b) Tight-buffered fibers color-coded in accordance with TIA/EIA-598 “Color Coding of Fiber Optic Cables.”
 - (c) Differential Mode Delay per TIA-492.
 - ii. Fibers: Meet TIA/EIA 455-45A “Microscopic Method for Measuring Fiber Geometry of Optical Waveguides” for 50/125 fiber optic cables.
 - iii. Meet or exceed all Attenuation requirements for fiber optic cable in Addendum 1 of TIA/EIA-568-B.3 “Additional Transmission Performance Specifications for 50/125 μm Optical Fiber Cables.”
 - iv. Minimum LED Transceiver Bandwidth Requirements: 2000 MHz at 1 Km at 850 nm and 500 MHz at 1 Km at 1300 nm.
 - (a) IEEE 802.3z Performance: Supports VCSEL 10 Gigabit Ethernet (10GbE) operation in 1000BASE-SX operating window (850 nm) at 300 meters.
 - v. Shall not exceed 1800 feet in length.
 - vi. Cable Operating Temperature Range:
 - (a) Indoor Cables: -20 degrees Celsius to 70 degrees Celsius.
 - (b) Outdoor Cables: -40 degrees Celsius to 70 Degrees Celsius.

B. Performance Requirements

1. System shall provide multiple recording channel solutions (4, 16, 32, 64, etc., channels) for the quantity of cameras shown.
2. System shall be software based and utilize a server level operating system such as Microsoft Server 2003, Microsoft Server 2008, etc.,
 - a. The server operating system shall allow regular updates and security patches to be installed.
 - b. The server shall have Hard Drive Fault Tolerance, Dual Power Supplies and OS Backup capabilities.
3. System shall allow enterprise level antivirus software to be loaded, configured and run per the manufacturer's specifications.
 - a. Certain directories may be excluded from real time scanning.
4. The server and client stations shall be accessible remotely.
5. System shall provide MGEG-4, MJPEG, wavelet and H.264 video compression.
6. IP cameras shall have vari-focal lenses with auto iris and remote digital zoom.
 - a. Camera lens shall be suited for the anticipated field of view.
7. IP cameras shall have a wide dynamic range and day night functionality.
8. System shall be capable of recording HD video and megapixel resolutions.
9. System shall provide variable frame rate recording up to 30 FPS (Basis shall be 10 fps).
10. System shall provide edge based motion sensing and recording features. (Basis is 75% motion for a 24 hour period.)
11. System shall allow simultaneous recording and playback of video.
12. System shall provide application and web-based camera viewing.
13. System shall provide multiple user access levels with associated permissions.
14. System shall be expandable.
15. System shall provide remote configuration and management.
16. System shall provide a minimum of 30 days of recorded video for each channel.
17. System shall support cameras from multiple vendors.
18. System shall comply with applicable requirements in Local, State and Federal Codes, TIA/EIA Standards, and BICSI methodology.
19. Specified cabling system derived from recommendations in approved telecommunications industry codes, standards and methods, including the following documents:
 - a. Articles 250, 725, 760, 770, 800,810 and 820 of the current National Electrical Code.
 - b. ANSI/TIA/EIA-568-B.1: Commercial Building Telecommunications Cabling Standard Part 1 – General Requirements

- c. ANSI/TIA/EIA-568-B.2: Commercial Building Telecommunications Cabling Standard Part 2 – Balanced Twisted Pair Cabling Components and subsections.
- d. ANSI/TIA/EIA-568-B.3: Commercial Building Telecommunications Cabling Standard Part 3 – Optical Fiber Cabling Components
- e. ANSI/TIA/EIA-569-A: Commercial Building Standard for Telecommunications Pathways and Spaces
- f. ANSI/TIA/EIA-606: Administration Standard for Telecommunications Infrastructure of Commercial Buildings
- g. ANSI/TIA/EIA-607: Commercial Building Grounding and Bonding Requirements for Telecommunications
- h. ANSI/TIA/EIA-758: Customer-Owned Outside Plant Telecommunications Cabling Standard
- i. BICSI Telecommunications Distribution Methods Manual (TDMM), 12th Edition
- j. National Fire Protection Agency (NFPA-70): National Electrical Code (NEC)

1.04 SUBMITTALS

- A. Comply with requirements of Division 0 and Division 1 - Submittals and as modified below.
- B. All submittals must conform to the state of Delaware K-12 wiring standards, please refer to this link for additional details:
 - 1. <http://dti.delaware.gov/pdfs/pp/CablingAndWiringStandard-K12.pdf>
- C. Product Data: Submit manufacturer's product literature, technical specifications, wiring diagrams, calculations and similar information for the following items demonstrating compliance with the specified requirements. Product submittals must clearly highlight the equipment being proposed. Failure to clearly indicate the selected items shall be rejected at the contractor's expense.
 - 1. Copper cable, patch cables and termination devices.
 - 2. Inner duct and accessories.
 - 3. Wiring diagrams.
 - 4. Sample of each cable test report.
 - 5. Cameras with anticipated lens type and size.
 - 6. POE Switches
 - 7. NVRs
 - 8. Power Supplies
 - 9. Software Applications
 - 10. Workstations
 - 11. Servers
 - 12. UPS Equipment
- D. Samples: Provide samples of equipment as described below, prior to installation, for approval by designer.

1. CCTV cables and connections
2. CCTV Cameras
3. CCTV Housings and Mounts

E. Quality Control Submittal

1. Test Reports: Submit complete sample test data and reports with exact labels used on cables and patch panels
2. Certificates
 - a. Manufacturer Certification: Submit certification from manufacturer of products to be installed under this contract certifying that Installer is authorized by manufacturer to install specified products.
 - b. Installer Experience Listing: Submit list of at least 5 completed projects as specified below in "Quality Assurance – Qualifications – Installer."

F. Contract Closeout Submittal: Comply with requirements of Division 0, including submission of operating and maintenance instructions as item in "Operation and Maintenance Data" manual described in that Section.

1.05 QUALITY ASSURANCE

A. All Work shall be installed in a first class, neat and workmanlike manner by skilled Technicians. The quality of the workmanship shall be subject to inspection and approval by authorized EBPS personnel. Any work found to be of inferior quality and/or workmanship shall be replaced and/or reworked until the approval of EBPS is obtained.

B. Qualifications

1. Installer
 - a. Qualified to cable, terminate and test data network cabling system, coaxial cable system and associated power wiring specified in this Section and Sections 27/28, certified by manufacturer of products to be installed, and completed at least 5 installations of similar size, nature and complexity as specified for this project.
 - b. Contractor must maintain a local presence in the State of Delaware. Submit office locations for review.
 - c. Contractor must provide proof that service and warranty work can be initiated with a 24 hour time period from a service call.

2.

C. Conditions for Consideration of "Or Equal" Products: Where products are specified by name and accompanied by the term "or equal", the proposed "or equal" product will be considered when the following conditions are satisfied. If all the following conditions are not satisfied, Design Consultant will return requests without action, except to record noncompliance with these requirements:

1. Proposed product does not require extensive revisions to the Contract Documents.
2. With the exception of the product name or number and manufacturer's name, proposed product conforms with requirements indicated on the Drawings and in the Specifications in every respect and will produce indicated results.

3. Proposed product is fully documented and properly submitted.
4. Proposed product has received necessary approvals of authorities having jurisdiction.
5. Proposed product is compatible with AND has been coordinated with other portions of the Work.
6. Proposed product provides specified warranty.
7. If proposed product involves more than one contractor, proposed product has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
8. Submission is accompanied with detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
9. Submission is accompanied with a list of similar installations for completed projects with project names and addresses and names and addresses of design consultants and authorities, if requested.
10. Submission is accompanied with proposed product's Manufacturer signed written statement on Manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents.

1.06 WARRANTY

- A. Installer's Warranty: Provide manufacturer's system warranty against electrical or mechanical defects for 1 year from date of final acceptance.
- B. A fifteen (15) year Extended Product Warranty and Systems Assurance Warranty for UTP camera wiring system shall be provided by the manufacturer as follows:
 1. Extended Product Warranty: The Extended Product Warranty shall ensure against product and workmanship defects, that all approved cabling components exceed the specifications of TIA/EIA 568B and Addenda for fiber link/channels and copper components, for a fifteen (15) year period. The warranty shall apply to all passive components, including both cable and connecting hardware as a combined system. Any claims cover replacement costs on any defective product, both material and labor. Extended warranties beyond fifteen (15) years will be considered.
 2. System Assurance: The System Assurance shall cover the failure of the wiring system to support the application which it was designed to support as well as additional application(s) introduced in the future by recognized standards or user forums that use the TIA/EIA 568B component and link/channel specifications for cabling, for a fifteen (15) year period.
 3. System Certification: Upon successful completion of the installation and subsequent inspection, the Authority shall be provided with a numbered certificate, from the manufacturing company, registering the installation.
- C. Manufacturer warranty coverage for fiber cable systems associated with the CCTV System.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Preferred Vendor – ONSSI Ocularis IS System
 1. Acceptable Substitutes
 - a. Pelco

- b. Exacq
- c. S2
- d. Or approved equal

B. Copper Cabling Components for video surveillance systems

1. UTP Camera Cabling (Plenum Rated)

- a. Camera cabling shall provide identical performance to Cat 6 UTP data and voice cabling included in Section 27 12 50 and meet all district performance criteria.
- b. Requirements: Complete balanced, twisted-pair compliant with current Category 6 provisions under TIA/EIA 568B Telecommunications Cabling Standard, including but not limited to:
 - i. "Component compliant" components certified to meet all requirements of TIA/EIA-568-B.2 "Balanced Twisted Pair Cabling Components."
 - ii. After assembly into completed cabling channel, all components meet performance requirements as specified in TIA/EIA-568-B.1 and B.2, meet cable manufacturer's and outlet manufacturer's performance requirements and are performance certified for Category 6 as a complete channel system.
 - iii. Shall meet specified physical and transmission characteristics requirements.
 - iv. Exceed minimum performance requirements of TIA/EIA-568-B by significant margin. Cabling solutions not demonstrating significant margin are not acceptable.
- c. Physical Characteristics
 - i. 100 Ohm Category 6 Unshielded Twisted Pair Cable (UTP)
 - ii. Meeting requirements of ANSI/ICEA S-80-576. For cables not specified in "Approved Components" paragraph, all 4 pairs insulated with F.E.P. providing maximum 0.023-inch diameter of insulated conductor.
 - iii. Security data cable shall be green in color
 - iv. Acceptable Cable
 - (a) See section 27 12 50
 - (b) Or Approved Equivalent
 - v. Consists of four 22 - 26 AWG twisted pairs.
 - vi. Cable shall be plenum or non-plenum as required by code.
 - vii. Color coding of pairs:
 - (a) Pair 1.....W-BL; BL
 - (b) Pair 2.....W-O; O
 - (c) Pair 3.....W-G; G
 - (d) Pair 4.....W-BR; BR
 - viii. Overall diameter not exceeding 0.250 inches for a single cable.

- ix. Ultimate Breaking Strength (ASTM D 4565): 400 N minimum
 - x. Withstands 1-inch bend radius at –20 degrees Celsius without jacket or insulation cracking.
 - d. Third-party verified to meet TIA/EIA Category 6 requirements. All completed cabling channels fully backwards compatible with requirements of Category 5 and 5e cabling systems.
 - e. Transmission Characteristics
 - i. DC resistance of any conductor not exceeding 9.38 Ohms per 100m max. at 20 degrees Celsius measured in accordance with ASTM D4566.
 - ii. Mutual capacitance of any pair at 1 kHz for 100 m. of cable not exceeding 5.6nF.
 - iii. DC resistance unbalance between any two conductor of any pair not exceeding 5 percent when measured at or corrected to 20 degrees Celsius in accordance with ASTM D 4566.
 - iv. Capacitance unbalance to ground at 1 kHz of any pair not exceeding 330 pF per 100 m.
 - v. Delay skew not exceeding 25 ns at 100 MHz.
 - vi. Propagation delay of any pair at 10 MHz not exceeding 5.7 ns/m.
 - vii. Maximum Attenuation of any pair not exceeding values given in TIA/EIA-568-B.2-1.
 - viii. NEXT coupling loss, PSNEXT loss, ELFEXT loss, PS-ELFEXT loss and Return Loss meeting requirements of TIA/EIA-568-B.2-1.
 - f. See section 27 12 50 for cabling requirements.
2. Fiber Optic Strands (Plenum Rated)
- a. 50 Micron Multimode Fiber Optic Strands: Ultra rated to 10 Gbps, fiber optic cable with 50/125 μm core/cladding diameters, 900 mm buffer.
 - i. Standards
 - (a) Meeting NEC, Article 770 – Optical Fiber Cables and Raceways and passed UL 910 flame test.
 - (b) Tight-buffered fibers color-coded in accordance with TIA/EIA-598 “Color Coding of Fiber Optic Cables.”
 - (c) Differential Mode Delay per TIA-492.
 - ii. Fibers: Meet TIA/EIA 455-45A “Microscopic Method for Measuring Fiber Geometry of Optical Waveguides” for 50/125 fiber optic cables.
 - iii. Meet or exceed all Attenuation requirements for fiber optic cable in Addendum 1 of TIA/EIA-568-B.3 “Additional Transmission Performance Specifications for 50/125 μm Optical Fiber Cables.”
 - iv. Minimum LED Transceiver Bandwidth Requirements: 2000 MHz at 1 Km at 850 nm and 500 MHz at 1 Km at 1300 nm.
 - (a) IEEE 802.3z Performance: Supports VCSEL 10 Gigabit Ethernet (10GbE) operation in 1000BASE-SX operating window (850 nm) at 300 meters.

- v. Shall not exceed 1800 feet in length.
 - vi. Cable Operating Temperature Range:
 - (a) Indoor Cables: -20 degrees Celsius to 70 degrees Celsius.
3. Patch Panels for CCTV Cabling
- a. All patch panels must provide identical performance to Cat 6 patch panels included in Section 27 12 50 and meet all district performance criteria
 - b. Shall meet requirements for category 6 (per state of Delaware Standards) performance requirements.
 - c. Panels shall contain the number of termination ports required to terminate all LAN and telephone jacks in service area, plus 20% spare capacity.
 - d. Acceptable units:
 - i. See section 27 10 00
 - ii. Or approved equivalent.
 - e. Panels shall contain the number of termination ports required to terminate all LAN and telephone jacks in service area, plus 20% spare capacity.
4. Patch Cables for CCTV Cabling
- a. Factory terminated and tested UTP patch cables at workstation and equipment cross-connect meeting requirements of ANSI/TIA/EIA-568-B for patch cable testing.
 - i. Meet all requirements of ANSI/TIA/EIA-568-B.2 standard.
 - ii. Contact plating of minimum of 50 micro inches of gold in contact area over 50 micro inch of nickel, compliant with FCC part 68.5.
 - iii. Use 8-position connector, unkeyed.
 - iv. Modular connector maintaining paired construction of cable to facilitate minimum untwisting of wires.
 - v. Factory assembled and constructed to 100 ohm, 4-pair UTP per ANSI/TIA/EIA-568-B for minimum, Category 6 compliance.
 - vi. Performance marking indelibly labeled on jacket by manufacturer.
 - vii. Accepts color-coded labels to comply with TIA/EIA-606 labeling requirements at both ends.
 - viii. Manufactured by ISO 9001 Company.
5. Power Wiring (if required beyond POE switches)
- a. Wires shall be approved for use in plenum rated spaces.
 - b. Power wiring shall be approved by the CCTV manufacturer for use with the CCTV system.
 - c. 14/2 AWG copper cable.
6. Network Video Recorder/Server

- a. Basis of Design – Iomnis DE14TB480B62
 - i. Minimum of 4 servers with no more than 40 cameras per server.
 - ii. Microsoft Server 2008 64 Bit
 - iii. Antivirus Software capable
 - iv. Quad core 3.4 GHz processors
 - v. 16 GB Ram
 - vi. Memory- 8GB DDR3 1333MHz
 - vii. Operating Systems
 - (a) Microsoft® Windows® Small Business Server 2008
 - (b) Microsoft® Windows® Essential Business Server 2008
 - (c) Microsoft Windows® Server 2008 SP2, x86/x64 (x64 includes Hyper-VM)
 - (d) Microsoft Windows® Server 2008 R2, x64 (includes Hyper-VM v2)2
 - viii. Storage
 - (a) Minimum One SATA 7200 RPM 6 GB/s 250 GB operating system drive
 - (b) Minimum Three SATA 7200 RPM 6 GB/s 250 GB Live Drive
 - ix. Network Interface Cards - Two dual port embedded Broadcom NetXtreme II 5709c Gigabit Ethernet NIC with failover and load balancing.
 - x. Optional 1GBe and 10GBe add-in NICs
 - xi. Peripheral bay - DVD + RW
 - xii. Drive Controllers
 - xiii. RAID Controllers - PERC H700 (6Gb/s) with 512MB battery-backed cache
 - xiv. Power Supplies - Two hot plug high efficient 502w PSU (Energy Smart)
 - xv. Uninterruptible Power supplies
 - xvi. Availability - Hot-plug hard drives, hot-plug redundant power, redundant cooling, ECC memory, Single Device Data Correction (SDDC), supports memory demand, patrol scrubbing and high availability failover cluster
 - xvii. Graphics - Integrated Matrox G200, 8 MB shared video memory
 - xviii. Management - iDRAC6 Enterprise
 - xix. Drive Controller Card Required
 - xx. Dedicated Server is required
7. Base Server
 - a. CPU: Intel Xeon (Quad Core or better recommended)

- b. RAM: 4 GB
 - c. Hard Drive: 500 GB or more for large systems utilizing extensive Video DB Bookmarking
 - d. Operating System: Microsoft® Windows® Server2008 (64-bit) or Windows 7.
 - e. 1 GB Network Card
8. Admin Client
- a. Quad Core Intel i5
 - b. RAM: Minimum 4 GB
 - c. Windows 7 Professional or Ultimate (32 or 64-bit)
 - d. Graphics Adapter: Adapter: PCI-Express, 1 GB RAM
 - e. RAM, Direct 3D supported
9. Software Platform
- a. Basis of Design – ONSSI Ocularis IS
 - i. 4, 16, 32 and 64 Channel availability
 - ii. Open Architecture
 - iii. HD compatibility
 - iv. MGE4, MJPEG, wavelet and H.264 Decoding
 - v. Megapixel resolution recording
 - vi. Variable frame rates up to 30 FPS
10. Network IP Cameras
- a. Indoor Day/Night Dome Basis of Design
 - i. Axis P3384-V 1 MP IP Dome
 - ii. Or approved equal with all mounts and accessories
 - b. Outdoor Day/Night Dome Basis of Design
 - i. Sony SNC DH160 with UNIMDB3 Gooseneck.
 - ii. Or approved equal with all mounts and accessories
 - c. Interior PTZ Camera Basis of Design
 - i. Axis Q6035 HD MP IP dome with Gooseneck and mount.
 - ii. Or approved equal with all mounts and accessories
 - d. Exterior PTZ Camera Basis of Design
 - i. Axis Q6035-E HD MP IP Dome with Gooseneck and Mount.
 - ii. Or approved equal with all mounts and accessories

- e. 180° Panamorph Camera
 - i. Aerocont AV8185DN with Dome, Gooseneck and Pole Mount.
 - ii. Or approved equals with all mounts and accessories
- 11. PTZ Controller
 - a. Axis T8310
- 12. Media Converters
 - a. Berk-Tek One Reach System
 - i. With Copper/Fiber Cable for signal and PoE+ power delivery.
- 13. Workstations
 - a. Basis of Design – Dell Precision T7500
- 14. Monitors
 - a. Basis of Design – Samsung BX2450
- 15. Rack Monitor
 - a. 19” SMK-920
- 16. UPS
 - a. Basis of Design – APC 3000 VAC UPS with 48V Battery Pack

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine conditions under which CCTV cabling and equipment and related components are to be installed in coordination with Installer of materials and components specified in this Section and notify affected Prime Contractors and Design consultant in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected to ensure a safe and timely installation.
 - 1. When Installer confirms conditions as acceptable to ensure proper and timely installation and to ensure requirements for applicable warranty or guarantee can be satisfied, submit to Design consultant written confirmation from applicable Installer. Failure to submit written confirmation and subsequent installation will be assumed to indicate conditions are acceptable to Installer.
 - 2. Visit Site to identify and become familiar with existing field conditions and specific requirements of each Site.
 - 3. Verify all dimensions in field and confirm condition of existing hardware to be utilized.
 - 4. Confirm space requirements and physical confines of all work areas to ensure that all materials can be installed in indicated spaces.
 - 5. Confirm all outlet locations and cable pathways and advise Design consultant in writing of any discrepancies or issues in Design described in Contract Documents.

3.02 PREPARATION

- A. Protection: Provide adequate protection of equipment and hardware before and after installation.

- B. Existing Communications Services: Ensure all telecommunications systems (voice, video and data) remain operational throughout the project.

1. Identify any circuits and/or wiring at the site not shown on T-Drawings and interfering with installation of specified Equipment.
2. Remove all accessible portions of abandoned communications cabling per NEC 800.52. Tag all communications cabling not terminated at both ends but retained for future use.

3.03 INSTALLATION

- A. Provide and install all components necessary to install complete telecommunications cabling and equipment systems, including (but is not limited to) connectors, patch cables, terminators, etc...

1. Cable runs shall be continuous and unbroken from end to end. Splicing of any LAN or coaxial video distribution cable is prohibited.
 2. Secure all horizontal cables within ceiling cavities to building structure.
 3. Loosely bundle all cables and support from structure at unequal intervals from 5 to 6 feet with spring steel fasteners and cable clip rated for use with high performance cables where cable tray or other support structure has not been provided as indicated on Drawings. All mounting clips shall be seismic type as per BOCA.
 4. Do not violate manufacturer's recommended loadings. Leave 30% capacity for future use of pathway.
 5. Verify all horizontal cable run lengths prior to installation. Re-distribute horizontal cabling to maintain distance requirements and maintain pathway route accessibility.
 6. Do not support cables from ceiling grid T-Bars, grid wire supports or bridle rings. Do not allow cables to touch ceiling grid.
 7. Install cables in EMT in all unfinished, exposed areas as shown in Design consultant and Architectural roof plans and/or T-Drawings, unless alternate pathways are noted.
 8. Do not secure cables with permanent cable ties. Do not tighten cable bundles in such a way as to cause jacket deformation or damage.
 9. Provide a minimum of 15' of cable slack at camera location and 24 inches at patch panels, unless noted otherwise.
 10. Place cables in compliance with TIA/EIA-568.B standards and BICSI recommended methods.
 11. Tight 90-degree bends are unacceptable, and use of plastic "cinch-type" tie-wraps are not permitted, in order to prevent damage to cable jacket and compromise the cable's electrical or optical characteristics.
 12. Cable bundles shall be neatly routed with a service loop to provide 10 feet of slack at the cross-connect end and as noted in the T-drawings. Cable bundles shall be secured using only black Velcro cable wraps.
 13. 10 feet of service loop shall be provided in the ceiling at each workstation. Contractor shall not secure service loop in coils, but route in such a manner as to minimize EMI.
- B. Determine allowable cable proximity to other electrical power sources of 480 Volts or less using TIA/EIA-569A "Cabling Pathway Standard" for UTP cable separations from sources of EMI:
1. Minimum separation distance form Power Source at 480 V or less:

CONDITION	<u>< 2kVA</u>	<u>2-5 Kva</u>	<u>> 5 kVA</u>
a. Unshielded power lines or electrical equipment in proximity to open or non-metal pathways	6 in.	12 in.	24 in.
b. Unshielded power lines or electrical equipment in proximity to open or non-metal pathways	3 in.	6 in.	12 in.
c. Power lines enclosed in a grounded metal conduit (or equivalent shielding) in proximity to grounded metal conduit pathway	3 in.	6 in.	12 in.
d. Transformers & Elec. Motors	40 in.	40 in.	40 in.
e. Fluorescent Lighting	12 in.	12 in.	12 in.

C. Install all exposed cabling in surface raceway by Wiremold, Hubbell or Panduit where in-wall conduit has not been provided. Follow all manufacturers' guidelines requirements regarding bending radius and slack. All bends, offsets and fittings shall be appropriately sized to provide 30% capacity after installation.

D. Install all cable in accordance with National, state and local codes and TIA/EIA Standards, and BICSI methods.

1. Follow manufacturer's guidelines and requirements for all cable termination.

E. Properly terminate all cables at camera locations and distribution racks. Permanently identify all cables in pullboxes, transition points, and termination points by affixing pre-marked self-adhesive wraps similar to Brady "B-500+ Plastic Cloth Markers."

F. Permanently identify all system components following TIA/EIA-606A "Administration Standard for Commercial Telecommunications Infrastructure" with identification format:

1. Identification: Provide permanent identification labels for patch panels, access panels and entrance facilities.

3.04 TESTING

A. LAN and Video Cabling System

1. Upon completion of work, all parts of the telecommunications installation shall be tested by the Telecommunications Contractor and demonstrated free of any defects. Preliminary testing will be permitted but shall not be accepted in lieu of obtaining final test results. Final test results shall be accomplished by the use of proper test equipment for the system being tested.
2. Re-terminate and re-test any cables or pairs of cables failing end-to-end testing requirements. Replace any faulty cables/pairs or termination devices. Remove all defective cables completely from pathways.

3.05 AS-BUILTS

A. Accurate as-built drawings shall be provided in electronic and hard copy format.

- a. All equipment shall be shown in its exact location
- b. All cables shall be labeled appropriately.

- c. All cameras shall be labeled and uniquely identified.
- d. 3 copies of electronic (CAD) drawings shall be distributed on appropriate media: 1 to construction management, 1 to designers and 1 to the school district.
- e. 3 hard copies of CAD drawings shall be plotted on full size sheets and test results of every installed cable and camera have been given to the construction management for appropriate distribution.

3.06 DEMONSTRATION

A. CCTV System Demonstration

- 1. 16 Hours of video surveillance demonstration and training on all aspects of the completely installed system must be provided for the owner.
 - a. Training shall be video recorded for the owner and given to them after acceptance.
 - b. Training and system demonstration must include all aspects of the system and its operation.
 - c. Additional training, beyond the initial 16 hours, shall be provided for the owner at their request on an hourly rate basis.

3.07 ACCEPTANCE

A. Contractors work shall be considered complete after the following conditions have been met:

- 1. Cable and electronics installation is complete and all cable runs have been tested and documented to be installed according to specifications and drawings.
- 2. A school district Technology representative has successfully tested the "LIVE" system.
- 3. All punch list items have been reconciled.
- 4. All disturbed ceiling panels, covers, etc. have been properly reinstalled.
- 5. All materials and trash have been removed from the site.
- 6. A 1-Year Installers warranty has been given to a school district Security or Technology representative.
- 7. Submit Manufacturers Extended Warranty Application.

END OF SECTION