ADDENDUM NO. 02

March 14, 2025

Edwardsburg Public Schools - Intermediate and Primary School Renovation

Intermediate School
27157 US 12
Edwardsburg, MI 49112

Primary School
69100 Section Street
Edwardsburg, MI 49112

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications and the Drawings dated February 10, 2025, by TowerPinkster. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 2-3 through ADD 2-2 and attached TowerPinkster Addendum No. 02 Intermediate School, dated March 13, 2025, consisting of 80 pages, and TowerPinkster Addendum No. 02 Primary School, dated March 13, 2025, consisting of 8 pages.

A. **SPECIFICATION SECTION 00 20 00 NOTICE TO BIDDERS**

1. Bid Opening. Bids will be publicly opened and read aloud on Tuesday, March 18, 2025, at 2:00 PM Bid receipt deadline, in the **District Administration Center, 27145 US 12, Edwardsburg, MI 49112.**

B. **SPECIFICATION SECTION 00 43 50 – SUBCONTRACTORS AND PRODUCTS LIST**

A. BID CATEGORY NO. 01 GENERAL TRADES

Add:

Section	01 57 23	Temporary Stormwater Pollution Controls
Section	22 05 33	Heat Tracing For Plumbing
Section	31 00 00	Earth Work
Section	32 13 00	Cement Concrete Pavement

B. BID CATEGORY NO. 03 ELECTRICAL

Add:

Section	28 13 00	Access Control

C. **SPECIFICATION SECTION 00 70 00 GENERAL CONDITIONS**

1. See attached revised General Conditions.

D. **SPECIFICATION SECTION 01 12 00 – MULTIPLE CONTRACT SUMMARY**

Paragraph 3.03 BID CATEGORIES

A. BID CATEGORY NO. 01 GENERAL TRADES

Add the following Specification

Section	01 57 23	Temporary Stormwater Pollution Controls
Section	22 05 33	Heat Tracing For Plumbing
Section	31 00 00	Earth Work
Section	32 13 00	Cement Concrete Pavement
Section	33 42 00	Stormwater Conveyance

Add the following Clarification

1. Clarification No. 01: **Bid Category No. 3 - Electrical** shall disconnect the roofing heat trace prior to demolition by **Bid Category No. 1 - General Trades**. Bid Category **No. 1 - General Trades** shall furnish and install the new heat trace as indicated on Drawing A102. **Bid Category No. 3 - Electrical** will provide final connections and testing.
2. Clarification No. 02**: Bid Category No. 1 - General Trades** shall be responsible for all concrete, underground drainage, and misc. sitework shown on the Civil Plans.

C. BID CATEGORY NO. 03 ELECTRICAL

Add the following Specification

Section 28 13 00 Access Control

Add the following Clarification

1. Clarification No. 01: **Bid Category No. 3 - Electrical** shall disconnect the roofing heat trace prior to demolition by **Bid Category No. 1 - General Trades**. Bid Category **No. 1 - General Trades** shall furnish and install the new heat trace as indicated on Drawing A102. **Bid Category No. 3 - Electrical** will provide final connections and testing.

E. **Refer to the attached Request For Information summary, Pre-Bid RFI No. 01 through 11 are included.**

SECTION 00 43 50 - SUBCONTRACTORS AND PRODUCTS LIST

PART 1 - GENERAL

1.01 DESCRIPTION

A. The two (2) low responsive Bidders in each Bid Category shall furnish electronically, the following Subcontractors and Products List to the Construction Manager within **two (2) working days (48 hrs.)** of bid opening, unless submitted with Bid. . The blanks appropriate to the Bid Category(ies) on which they bid shall be completed.

1. The Owner and Architect shall have the right to select any material or equipment named in the Specifications for any particular item where the Bidder either fails to list same or lists more than one name for the item in question.
2. It is intended that this list will show the manufacturer and supplier of major items of work that will be subcontracted and to whom.

1.02 INSTRUCTIONS FOR SUBCONTRACTORS AND PRODUCTS LISTS

A. Each Bidder shall submit a copy of his list of subcontractors and manufacturers of products and equipment proposed for work indicated as required above.

B. The list shall be submitted on forms provided and shall be completely executed. "As Specified" or "With Equipment" type of terminology will not be accepted.

C. Under "Subcontractor", insert the name of the firm which the Bidder proposes to have perform the respective work. If work will be done by the Prime Bidder and no subcontract will be awarded, state "By Own Forces".

D. Submission does not constitute acceptance for use of listed manufacturers' products. Materials and subcontractors are subject to the provisions of the General Conditions and "Standard of Product Acceptability" and must be formally reviewed and adjudged acceptable by the Architect/Engineer.

E. Engineer, Architect and Owner reserve the right to reject submissions of materials, work, or subcontractors that do not, in their opinion, meet the requirements of Drawings, Specifications or job conditions.

F. Materials and subcontractors used for work on the Project shall be in accordance with accepted material list.

1. The list is intended to assure use of materials and vendors acceptably equivalent to those specified and is not a substitution sheet or complete listing of required materials or services.

2. Substitutions for listed items will not be allowed, except when termed acceptable, in writing by the Architect/Engineer, provided that substitution will result in a cost savings to the Owner , determined by the Owner to be a better product,or is made necessary due to unavailability of listed item. Unavailability shall be confirmed in writing by manufacturer named on accepted list.

1.03 CIVIL AND ARCHITECTURAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 01- GENERAL TRADES

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

Section	Description	Cost $$$	Subcontractor	Manufacturer
01 21 00	Allowances			
01 51 60	Temporary Sanitary Facilities			
01 51 80	Temporary Fire Protection			
01 52 10	Construction Aids and Temporary Enclosures			
01 52 60	Rubbish Container			
01 53 10	Fences (Temporary Security)			
01 57 23	Temporary Stormwater Pollution Controls			
01 57 60	Project Signs Section			
02 41 19	Selective Demolition			
03 20 00	Concrete Reinforcing			

Section	Description	Cost $$$	Subcontractor	Manufacturer
03 30 00	Cast-in-Place Concrete			
04 05 11	Masonry Mortaring And Grouting			
04 20 00	Unit Masonry			
05 12 00	Structural Steel Framing			
06 10 00	Rough Carpentry sf0			
06 40 23	Interior Architectural Woodwork			
06 41 16	Plastic-Laminate-Faced Architectural Cabinets			
06 61 16	Solid Surfacing Fabrications			
07 54 16	Ketone Ethylene Ester - Kee Roofing			
07 71 00	Roof Specialties			
07 84 13	Penetration Firestopping			
07 84 43	Joint Firestopping			
07 92 00	Joint Sealants sf0			
08 11 13	Hollow Metal Doors And Frames sf2			
08 12 43	Fire-Resistance-Rated Frames			
08 14 16	Flush Wood Doors sf0			
08 41 13	Aluminum-Framed Entrances And Storefronts sf1			
08 80 00	Glazing sf0			
08 88 13	Fire-Rated Glazing			
09 22 16	Non-Structural Metal Framing			

Section	Description	Cost $$$	Subcontractor	Manufacturer
09 29 00	Gypsum Board			
09 30 00	Tiling			
09 51 13	Acoustical Panel Ceilings			
09 65 13	Resilient Base And Accessories			
09 68 13	Tile Carpeting			
09 91 23	Interior Painting			
09 96 00	High-Performance Coatings sf0			
10 11 00	Visual Display Units			
10 14 19	Dimensional Letter Signage			
10 28 00	Toilet, Bath, And Laundry Accessories			
10 44 13	Fire Protection Cabinets sf0			
10 44 16	Fire Extinguishers sf1			
12 24 13	Roller Window Shades			
12 36 23.13	Plastic-Laminate-Clad Countertops			
12 36 61.16	Solid Surfacing Countertops			
22 05 33	Heat Tracing For Plumbing			
31 00 00	Earth Work			
32 13 00	Cement Concrete Pavement			
33 42 00	Stormwater Conveyance			

Name of Bidder:	Date:
Address:	
City/State/Zip:	
Telephone:	
By:	

1.04 MECHANICAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 02 - MECHANICAL

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If dual listing of manufacturers or subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice.

MECHANICAL WORK

Section	Description	Cost $$$	Subcontractor	Manufacturer
01 21 00	Allowances			
01 51 30	Temporary Heating, Ventilation and Cooling			
01 51 50	Temporary Water			
02 41 19	Selective Demolition			
21 05 00	Common Work Results For Fire Suppression			
21 13 00	Fire-Suppression Sprinkler Systems			
22 05 29	Hangers And Supports For Plumbing Piping And Equipment			
22 05 53	Identification For Plumbing Piping And Equipment			
22 07 19	Plumbing Piping Insulation			
22 10 05	Plumbing Piping			
22 30 00	Plumbing Equipment			
22 40 00	Plumbing Fixtures			

Section	Description	Cost $$$	Subcontractor	Manufacturer
23 05 17	Sleeves And Sleeve Seals For HVAC Piping			
23 05 23	General-Duty Valves For HVAC Piping			
23 05 29	Hangers And Supports For HVAC Piping And Equipment			
23 05 48	Vibration And Seismic Controls For HVAC			
23 05 53	Identification For HVAC Piping And Equipment			
23 05 93	Testing, Adjusting, And Balancing For HVAC			
23 07 13	Duct Insulation			
23 07 19	HVAC Piping Insulation			
23 09 93	Sequence Of Operations For HVAC Controls			
23 21 13	Hydronic Piping			
23 21 14	Hydronic Specialties			
23 31 00	HVAC Ducts And Casings			
23 31 00	HVAC Ducts And Casings			
23 33 00	Air Duct Accessories			
23 37 00	Air Outlets And Inlets			
23 81 00	Vertical Unit Ventilator			
23 82 00	Convection Heating And Cooling Units			

Plumbing Fixtures:	Manufacturer:
a)	
b)	
c)	
d)	
e)	
f)	
g)	
h)	
i)	
j)	
k)	
l)	

Name of Bidder:	Date:
Address:	
City/State/Zip:	
Telephone:	
By:	

1.05 ELECTRICAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 03 - ELECTRICAL

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If dual listing of manufacturers or subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice.

ELECTRICAL WORK

Section	Description	Cost $$$	Subcontractor	Manufacturer
01 21 00	Allowances			
01 51 10	Temporary Electricity, Lighting and Warning Systems			
02 41 19	Selective Demolition			
26 00 10	Supplemental Requirements For Electrical			
26 05 05	Selective Demolition For Electrical			
26 05 19	Low-Voltage Electrical Power Conductors And Cables			
26 05 26	Grounding And Bonding For Electrical Systems			
26 05 29	Hangers And Supports For Electrical Systems			

Section	Description	Cost $$$	Subcontractor	Manufacturer
26 05 33.13	Conduit For Electrical Systems			
26 05 33.16	Boxes For Electrical Systems			
26 05 33.23	Surface Raceways For Electrical Systems			
26 05 53	Identification For Electrical Systems			
26 05 83	Wiring Connections			
26 09 23	Lighting Control Devices			
26 24 16	Panelboards			
26 27 26	Wiring Devices			
26 28 13	Fuses			
26 28 16.13	Enclosed Circuit Breakers			
26 28 16.16	Enclosed Switches			
26 51 00	Interior Lighting			
28 13 00	Access Control			
28 46 00	Fire Detection And Alarm			

Name of Bidder:	Date:
Address:	
City/State/Zip:	
Telephone:	
By:	

END OF SECTION 00 43 50

AIA® Document A232® – 2019

General Conditions of the Contract for Construction, *Construction Manager as Adviser Edition*

for the following PROJECT:
(Name, and location or address)

Edwardsburg Public Schools
2024 Bond Issue Projects

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

The Skillman Corporation
8120 Moorsbridge Road, Suite 101
Portage, MI 49024

THE OWNER:
(Name, legal status, and address)

Edwardsburg Public Schools
69410 Section Street
Edwardsburg, MI 49112

THE ARCHITECT:
(Name, legal status, and address)

Tower Pinkster
242 E. Kalamazoo Avenue
Kalamazoo, MI 49007

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.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

TABLE OF ARTICLES

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, these General Conditions of the Contract (, 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 the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal 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 Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) 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, transportation and services incidental thereto 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 and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than the Contractor or Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

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

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

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, calculations, studies, surveys, models, sketches, drawings, specifications, and other similar materials and electronic/digital information produced in relation to the Project.

(Paragraph deleted)

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 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 indicated results. The Contractor shall promptly call to the attention of the Owner, the Construction Manager and the Architect any discrepancies or inconsistencies in the Drawings or Specifications that affect its Work. In the event of discrepancies or inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes and ordinances, the Contractor shall (1) provide the better quality or greater quantity of Work, or (2) comply with the more stringent requirement. Figure dimensions shall take precedence over scale measurements, large scale details shall take precedence over small scall drawings, and drawings of a later date shall take precedence over those of an earlier date. Any part of the Work shown on the Drawings but not in the Specifications, or vice versa, shall be considered as part of the Work, the same as though included in both. The Work to be undertaken by the Contractor shall include all incidental work necessary for the completion of the Project even though it may not be specifically described in the Specifications or Drawings.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 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. When a duplication of labor, material or equipment occurs in the Drawings or the Specifications by assignment of work to separate Contractors, each Contractor shall be deemed to have bid on the basis of providing such labor, material and equipment and the Construction Manager shall decide which Contractor(s) shall provide the same, with appropriate adjustment to the Contract Sum.

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

.1 Whenever a product is specified in accordance with a Federal Specification, an ASTM Standard, an American National Standards Institute Specification, or other association standard, the Contractor shall present an affidavit from the manufacturer when requested by the Owner or required by the Contract Documents, certifying that the product complies with the particular standard or specification. When requested by the Owner or the Construction Manager or required by the Contract Documents, support test data shall be submitted to substantiate compliance.

2. Whenever a product is specified or shown by describing proprietary items, model numbers, catalog numbers, manufacturer, trade names, or similar reference, no substitutions may be made unless accepted prior to execution of the Contract or if accepted as a change in the Work in accordance with the Contract Documents.

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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.

§ 1.4.1 The terms "knowledge," "recognize," and "discover," and their respective derivatives, when used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows (or should know), recognizes (or should recognize), and discovers (or should discover) in exercising reasonable care and skill.

§ 1.4.2 The phrase "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the care, skill and diligence required of a contractor by the Contract Documents.

§ 1.4.3 The words "approved," "equal to" and "as directed", shall mean "to the satisfaction of the Construction Manager and/or Architect".

§ 1.4.4 The words "products" and "materials" shall include all materials, goods, supplies, systems, and equipment.

§ 1.4.5 The word "provide," including derivatives, shall mean to fabricate, transport, deliver, install, erect, construct, test, and furnish all labor, materials, equipment, apparatus, appurtenances, and all other items necessary to properly complete in place, ready for operation and use.

§ 1.4.6 The words "repeatedly fails" and other similar expressions, as used in reference to the Contractor, shall mean any combination of acts and omissions that cause the Owner, Construction Manager or Architect to reasonably conclude that the Contractor will not complete the Work within the Contract Time, for the Contract Sum, or in compliance with the requirements of the Contract Documents.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Owner's rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner.

§ 1.6 Notice

§ 1.6.1 Where the Contract Documents require the Contractor to notify or give notice to the Owner or Construction Manager, including a Notice of Claim as provided in Section 15.1.3, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by certified or registered mail, or by courier providing proof of delivery.

(Paragraph deleted)

§ 1.7 Digital Data Use and Transmission

The parties may agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 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 Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

(Paragraph deleted)

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; or (2) a change in the Work materially changes the Contract Sum.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person without prior written notice to and consent of the Owner.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Owner under the Contract Documents, including those required under Section 3.7.1, the Contractor 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, assisted by the Construction Manager, shall secure and pay for the building permit.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 The Owner may furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site, but information furnished by the Owner that is not identified as a Contract Document is for informational purposes only and the Owner shall not be liable for inaccuracies or omissions therein, nor shall any inaccuracies or omissions in such items justify an increase in the Contract Sum or relieve the Contractor of its responsibility to perform the Work in accordance with the Contract Documents.

§ 2.3.6 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and necessary to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish the documents electronically and the Contractors shall subscribe and pay for their subscription to the software set forth by the Owner to manage the plans and specifications. .

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.3.9 The Owner shall render decisions and give approvals to the extent required by the Contract Documents. Before performing the Work, the Contractor shall inform the Owner in writing of any information that is necessary for the Contractor's performance of the Work. The Owner's approval or acceptance of, or payment for, any of the Work shall not be construed or operate as a waiver of any right under the Contract or of any cause of action arising out of the performance of the Contract.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to 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, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within forty-eight (48) hours after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. The Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If such default or neglect results in an emergency or a threat to person or property, the Contractor shall immediately commence to correct such default or neglect upon receipt of written or oral notice.

§ 2.6 Extent of Owner's Rights

§ 2.6.1 The rights stated in this Article 2 and elsewhere in the Contract Documents are cumulative and not in limitation of any rights of the Owner granted in the Contract Documents or at law or in equity.

§ 2.6.2 In no event shall the Owner or Construction Manager have control over, charge of, or responsibility for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, notwithstanding any of the rights and authority granted in the Contract Documents.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor 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 Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate a single representative assigned to the Project who shall be responsible for attending all weekly and other meetings, monitoring schedules and coordinating all activities. The Contractor's representative shall have the authority to commit and bind the Contractor. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its 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 or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 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. The Contractor and each Subcontractor shall evaluate and satisfy themselves as to the conditions and limitations under which the Work is to be performed, including without limitations (1) the

location, conditions, layout and nature of the Project site and surrounding areas, (2) general prevailing climatic conditions, (3) anticipated labor supply and costs, and (4) availability and cost of materials, tools and equipment. Neither the Owner nor the Construction Manager assume any responsibility or liability for the physical condition or safety of the Project site, or any improvements located on the Project site; these are solely the responsibility of the Contractor. The Owner shall make no adjustment to the Contract Sum or the Contract Time in connection with any failure by the Contractor or any Subcontractor to comply with this Subparagraph.

.1 The exactness of existing grades, elevations, dimensions and locations given on the Drawings or any document issued by the Construction Manager, the Architect or the Owner, or the work installed by separate contractors, is not guaranteed by the Architect, the Construction Manager, or the Owner.

.2 Mechanical and electrical drawings are diagrammatic only; actual Work shall be installed from approved shop drawings with all measurements obtained at the Project site by the Contractor.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities relating to design (but not means, methods, techniques, sequences and procedures), but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require. If additional instructions from the Architect are necessary for the proper execution of the Work, the Contractor shall make a written request for the Architect's interpretation as provided under Article 4. The Work shall be executed in conformity with the Architect's additional instructions and the Contractor shall refrain from any Work relating thereto until the Contractor has received the Architect's additional instructions.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities relating to design (but not means, methods, techniques, sequences and procedures)..

§ 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 the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures.

§ 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 or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 Within fifteen (15) days after Preconstruction Meeting, the Contractor shall assemble all necessary information and data discussed with the Owner, Architect, and Construction Manager during the post-bid meetings as identified in the Information to Bidders, and submit updated information from those meetings as well as the following:

1. A Schedule of Values in the format and detail required by the Construction Manager.
2. The Contractor's safety program, including HAZCom Program.
3. A complete and detailed submittal schedule.

§ 3.3.5 The Contractor shall furnish to the Construction Manager and the Architect periodic progress reports on the Work in such form as requested by the Construction Manager, including information on the status of materials and equipment which may be in the course of preparation, manufacture or transit. Regularly scheduled progress meetings shall be held weekly, unless otherwise directed.

§ 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, all direct jobsite (or "General Conditions") costs, 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. The Contractor shall provide, maintain, and remove all temporary offices, structures, sheds and storage facilities and all related utilities, gas, telephone, water and restore all areas to their original or intended use to the satisfaction of the Owner. Storage areas for the use of the Contractor shall be designated by the Construction Manager. No materials or products shall be stored except in areas approved by the Construction Manager.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall remove from the Project any person or entity under the Contractor's control which the Construction Manager or the Owner considers unsatisfactory. The Contractor shall assure harmonious labor relations to prevent delay, disruption, or interference to the Project, and shall prevent strikes, slowdown, work interruptions, jurisdictional disputes and other labor disputes relating to the Work. The Contractor shall require its Subcontractors, material suppliers and other such persons or entities to agree to the provisions of this Section and if any of them fail to fulfill any of the covenants set forth in this Section, the Contractor shall be deemed to be in default under the Contract Documents.

§ 3.4.4 Materials and equipment shall conform to manufacturers' standards and shall be installed in strict accordance with the manufacturers' latest directions. The Contractor shall, if required by the Owner, the Construction Manager or the Architect, furnish satisfactory evidence as to the kind and quality of any materials.

§ 3.4.5 The Contractor shall pay all royalties and license fees relating to the Work.

§ 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 the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit and shall be performed in a workmanlike manner and comply with all applicable laws, building codes, rules

and regulations. Products incorporated into the Work shall be fit for the purpose for which they are intended and shall be merchantable. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and 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. Upon notice from the Owner or the Construction Manager, the Contractor shall, within forty-eight (48) hours following notice from the Owner, Architect or Construction Manager, correct and cure, at the Contractor's expense, all defects and non-conformance in the Work.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.5.3 If, within one year after the date of Substantial Completion of Work, or by the terms of a special warranty required by the Contract Documents, any of the Work is found to be defective or non-conforming with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner. The Contractor's warranty excludes defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, and improper or insufficient maintenance and abuse. This warranty is in addition to all special or extended warranties required by the Contract Documents or otherwise received from the Contractor or any Subcontractor, material supplier or manufacturer. The one year period for correction of defective or non-conforming Work does not constitute a limitation period with respect to the enforcement of the Contractor's other obligations under the Contract Documents and the foregoing warranty shall not affect, limit or impair the Contractor's responsibility for defects in the Work which do not appear within the applicable warranty period. Neither the acceptance of the Work nor any payment shall constitute a waiver of any claims against the Contractor for defective or nonconforming Work, whether latent or apparent, or otherwise act to release or discharge the Contractor from liability.

§ 3.5.4 The Contractor shall indemnify the Owner, the Construction Manager and the Architect against all claims, damages and expenses, including attorney's fees, incurred by the Owner, the Construction Manager or the Architect as a result of the Contractor's failure to abide by its warranty obligations.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that 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, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the general building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work. As soon as practicable following commencement of the Work, the Contractor shall furnish the Owner with copies or certificates of all permits and licenses obtained, fees paid and inspections necessary for the proper execution and completion of the Work. All connection charges, assessments, and inspection fees imposed by any governmental agency or utility company are included in the Contract Sum and shall be the Contractor's responsibility.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. The Contractor shall procure and obtain all bonds required of the Owner or the Contractor by the municipality or other public or private body with jurisdiction over the Project and shall prepare all applications, supply all necessary documentation, and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay all charges for approvals for street closings, parking meter removal, and other similar matters as may be necessary or appropriate for the performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that 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, the Contract Sum shall be equitably adjusted by Change Order, but only if the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. Any surveys and other documents describing the physical characteristics, legal limitations or utility locations for the Project site that are not identified as Contract Documents are for informational purposes only and the Owner shall not be liable for inaccuracies or omissions therein, nor shall any inaccuracies or omissions in such items relieve the Contractor of its responsibility to perform the Work in accordance with the Contract Documents.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features under Sections 3.7.4 and 3.7.5 shall be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 Where allowances are required, they will be incorporated in Section 012100 – Allowances. References to Paragraph 3.8 elsewhere in the Contract Documents shall read as referring to that Section in the Specifications.

(Paragraphs deleted)

§ 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.

§ 3.9.2 Superintendent shall be satisfactory to the Construction Manager and the Owner, and the Construction Manager and Owner shall have the right to require the Contractor to remove a Superintendent from the Project whose performance is not satisfactory, and replace the Superintendent with a Superintendent who is satisfactory to the Construction Manager and Owner. The Contractor shall not replace the Superintendent without the written consent of the Construction Manager and the Owner.

(Paragraph deleted)

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, within fifteen (15) days of the Pre-Construction Meeting, shall submit for the Owner's and Architect's information, and the Construction Manager's approval, a Contractor's Construction Schedule for the Work. The Construction Schedule shall contain detail appropriate for the Project as required by the Contract Documents, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. In addition, the Construction Schedule shall include a detailed breakdown of the planned duration, start date and completion date for each activity and estimated. The Construction Schedule shall provide for the orderly progression of the Work to completion, shall not exceed time limits under the Contract Documents, shall be related and conform to the Project Schedule, and shall provide for expeditious and practicable execution of the Work. The schedule shall be revised at appropriate intervals as required by the Contract Documents or otherwise required by the conditions of the Work and Project.

§ 3.10.2 The timing of all Work and material and equipment deliveries shall conform to the Project Schedule. The Construction Manager shall have the right to modify the Project Schedule to vary the sequence or suspend, delay, or accelerate the commencement or execution of the Work. The Contractor shall transfer its laborers to such points as

directed by the Construction Manager and execute such portions of the Work as may be required to enable other Separate Contractors to properly carry on their work without delay or interference.

§ 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 Project Schedule and allows the Construction Manager and Architect reasonable time to review submittals.

§ 3.10.4 The Contractor shall perform the Work in conformance with the most recent Project Schedule issued by the Construction Manager.

§ 3.10.5 In the event the Construction Manger determines that the performance of the Work has not progressed, or likely will not progress, to the level of completion required by the Contract Documents, the Construction Manager shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime, (2) stacking trades, (3) expediting material deliveries, (4) supplying additional manpower, equipment, and facilities, and (5) other similar measures. Such corrective measures shall continue until the progress of the work complies with the state of completion required or anticipated by the Contract Documents. If the Contractor refuses to take such corrective measures as directed, the Owner may hire others to perform or supplement the Contractor's performance of the Work and deduct all associated costs from the Contract Sum or, to the extent the Contract Sum is insufficient to cover all such associated costs, Contractor shall reimburse the Owner within five (5) days of written demand by Owner.

§ 3.11 Documents and Samples at the Site

(Paragraph deleted)

Refer to Section 017700 – Closeout Procedure, for provisions on this subject. References to Section 3.11 elsewhere in the Contract Documents shall read as referring to Section 017700 in the Specifications.

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Refer to Section 013300 – Submittal Procedures, for provisions on this subject. References to Section 3.12 elsewhere in the Contract Documents shall read as referring to Section 013300 in the Specifications.

(Paragraphs deleted)

§ 3.13 Use of Site

§ 3.13.1 Refer to Section 011200 – Multiple Contract Summary, for provisions on this subject. References to Section 3.13 elsewhere in the Contract Documents shall read as referring to Section 011200 in the Specifications.

(Paragraph deleted)

§ 3.14 Cutting and Patching

§ 3.14.1 Refer to Section 017310 – Cutting and Patching, for provisions on this subject. References to Section 3.14 elsewhere in the Contract Documents shall read as referring to Section 017310 in the Specifications.

(Paragraph deleted)

§ 3.15 Cleaning Up

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

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents,. Construction Manager may impose a $500 per day fine for each day the Contractor fails to clean up to the satisfaction of the Construction Manager. Refer to Specification Section 015690 – Housekeeping and Safety, for provisions on this subject. References to Section 3.15 elsewhere in the Contract Documents shall read as referring to Section 015690 in the Specifications.

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall defend, 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, causes of action, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance under the Contract Documents, provided that such claim, damage, loss, or expense is (1) attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom, and (2) is caused or contributed to, or is alleged to have been caused or contributed to, in whole or in part, by (a) any negligent act or omission or (b) any act or omission inconsistent with the Contract Documents of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts any of them may be responsible by contract or by law, regardless of whether or not such claim, cause of action, damage, loss, or expense is caused in part by the fault of a party indemnified hereunder. Contractor agrees that the duty to defend shall entitle the indemnitees to approval of the defense counsel. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that 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 Section 3.18.1 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 Indemnity for Liens/Release of Liens

§ 3.19 Project Construction Wages

§ 3.19.1 The Contractor shall pay wages not less than those established for the Project. Refer to Specification Section 008300 for the established wage for the Project.

§ 3.19.2 The Contractor shall provide a schedule of wages with the Owner and Construction Manager prior to commencing work. The Schedule of Wages shall conform to the requirements set forth in Article 7.2.1 of these amended General Conditions.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

§ 4.1.3 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 and Architect except as provided in the Owner-Construction Manager or Owner-Architect Agreements. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully 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 the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest Project Schedule.

§ 4.2.5 The Construction Manager and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of 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 or entities performing portions of the Work.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor except when necessary to confirm sums owed and payment to Subcontractors or material suppliers, when the Contractor fails to communicate with Subcontractors or material suppliers in an expeditious manner, and when otherwise provided in the Contract Documents. Communications by and with other Contractors shall be through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.7 The Construction Manager and Architect will review all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 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 4.2.8 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, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those submitted by the Contractor . The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 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 in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect 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 Construction Manager and 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 Construction Manager and Architect's review shall not constitute approval of safety precautions or 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.

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

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application for Payment or final Project Application for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 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 Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 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 through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.19 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.

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

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

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 Separate Contractors or the subcontractors of other Contractors or Separate 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, the Contractor, as soon as practicable after award of the Contract, shall notify the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. The list of names shall state specifically the portion of the Work to be performed or supplied by each and that person's or entity's contract sum for that portion of the Work. The failure of the Owner to object to any person or entity on the list within ten (10) days shall constitute notice of no reasonable objection. The Contractor shall not accept bids from, any person or entity to whom the Owner has a reasonable objection. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period 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. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time 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 substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution. The Contractor shall notify the Owner, Architect, and Construction Manager of the proposed substitution of a Subcontractor a minimum of ten (10) days prior to the proposed change. The Owner may require the Contractor to change a Subcontractor or Sub-subcontractor previously approved and, if the Contractor is in full compliance with the Contract Documents, the Contract Sum shall be increased or decreased by a mutually agreeable amount.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, technical, administrative, procedural, legal and otherwise, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract 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 that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.3.1 Any portion of the Work performed by a Subcontractor shall be performed pursuant to a written subcontract between the Contractor and Subcontractor. The Construction Manager and the Architect assume no responsibility for reviewing, monitoring, or verifying activities or relationships involving Subcontractors or any lower tiered subcontractors and suppliers or their respective compliance with the Contract Documents.

§ 5.3.2 The Contract Documents shall confer no benefit, right or remedy, either intended or incidental, upon any Subcontractor, design professional, sub-subcontractor, material supplier, equipment lessor or laborer to make claims against the Owner, the Construction Manager or the Architect.

§ 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 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

§ 5.4.2 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.

(Paragraph deleted)

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE 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, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Contractor shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with the Contractor.

§ 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 or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, 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, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, 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

If a dispute arises among the Contractor, Separate Contractors, 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, the Owner may clean up and the Construction Manager will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 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. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.1.4. A change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that the Owner has been unjustly enriched by an alteration of or addition to the

Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents.

§ 7.1.5 The form and content of all recurring documents (i.e. Change Orders, Construction Change Directive, reports, and timesheets) may be designated by the Construction Manager, and the Contractor agrees to use such forms.

§ 7.2 Change Orders

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

Within seven (7) days of receipt of a requested change, unless requested sooner by the Construction Manager, the Contractor shall advise the Construction Manager of the impact of the change, if any, upon the Contractor's Work, including any adjustment in the Contract Time or the Contract Sum. Failure to so advise the Construction Manager within the specified time period shall constitute a waiver of the Contractor's right to assert a Claim relating to the change.

§ 7.2.1 For each change over $1,000.00, the Contractor shall furnish a detailed, written proposal itemized according to the pricing guidelines set forth below as a condition precedent to the Owner's consideration of a Change Order request. Any Subcontractor, sub-subcontractor and supplier pricing shall also be itemized according to these guidelines. All proposals shall be prepared in the categories and in the order listed below.

.1 Labor – All field labor shall be priced in compliance with any Wage Determination for this Project, excluding labor burden which is covered under subsection .2 below. The payroll is to be based on straight time only and is to include number of hours and rate of pay for each classification of work. If overtime is approved in writing, the Contractor shall list only the straight time portion in this item.

.2 Labor burden – All established payroll taxes, assessments and fringe benefits on the labor under subsection .1 above. This may include, but is not limited to, FICA, Federal and State Unemployment, Health and Welfare, Pension Funds, Worker's Compensation and Apprentice Fund. Each of the fringes shall be listed as a separate line item.

.3 Equipment rentals – All charges for non-owned heavy or specialized equipment at up to 100% of the documented rental cost. No rental charges will be allowed for hand tools, minor equipment, scaffolds, etc. Downtime due to repairs, maintenance and weather delays will not be allowed.

.4 Owned equipment – All charges for owned, heavy or specialized equipment at up to 100% of the cost listed by the Associated Equipment Dealers Blue Book. No recovery will be allowed for hand tools, minor equipment, scaffolds, etc. Downtime due to repairs, maintenance and weather delays will not be allowed.

.5 Trucking – A reasonable delivery charge or per mile trucking charge for delivery of required materials or equipment. Charges for use of a pickup truck will not be allowed.

.6 Overhead – Includes telephone, telephone charges, facsimile, telegrams, postage, photos, photocopying, hand tools, scaffolds (one level high), tool breakage, tool repairs, tool replacement, tool blades, and bits, home office estimating, clerical and account support, home office labor, travel and parking expenses.

.7 Materials – All materials purchased by the Contractor and incorporated into the changed Work, showing costs, quantities, or Unit Prices of all items, as appropriate. Reimbursement for material costs shall only be allowed in the amount of the Contractor's actual cost including any and all discounts, rebates and related credits.

.8 Miscellaneous – The following items are allowable with no overhead and profit:

(i) The cost of extending the Bond and the cost of extending commercial general liability, builder's risk and specialty coverage insurance.

(ii) The premium portion only for approved overtime (labor and labor burden). The straight time portion is included in subsections .1 and .2 above.

(iii) Fees for permits, licenses, inspections, tests, etc.

.9 Costs which shall not be reimbursed for changed Work include the following:

(i) Employee Retirement and Profit-Sharing Plans, regardless of how defined or described.

(ii) Voluntary Employee Deductions.

.10 The cost of the Contractor's overhead and profit on Change Orders shall be:

(i) For extra Work completed by the Contractor with his own labor, ten percent (10%) shall be added to Items .1, .2, .3, .4, .5, and .7 of Section 7.2.1 as an allowance for overhead and profit.

(ii) For extra Work completed by Subcontractors of the Contractor, five percent (5%) shall be added to Items. .1, .2, .3, .4, .5, and .7 of Section 7.2.l as an allowance for overhead and profit.

§ 7.2.2 The Owner, the Construction Manager and the Architect shall be permitted to review, audit and copy the Contractor's records relating to Change Order proposals, Change Orders and changed work (whether based on lump sum, unit prices, or costs) upon reasonable notice and during normal business working hours throughout the term of this Agreement and for a period of three (3) years after final payment or longer if required by law or the Contract Documents. "Records" shall include any and all information, materials and data of every kind and character (hard copy as well as computer readable data) that may, in the Owner's, the Construction Manager's or the Architect's judgment, have any bearing on or pertain to the pricing of changed, added or deleted Work and the accuracy of the Contractor's representations regarding pricing and claims information submitted by the Contractor. If an audit or examination in accordance with this Section disclosed overcharges by the Contractor, the cost of the audit shall be immediately reimbursed by the Contractor in addition to the overcharges.

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including but not limited to all direct and indirect costs associated with such change, claims based on the cumulative impact of changes, and any and all other adjustments to the Contract Sum and the Contract Time.

§ 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 prior to agreement on 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 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment 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, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. 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.
(Paragraphs deleted)

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement 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.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. 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.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 The Contractor shall not engage in the practice of inflating Change Order proposals or costs under Article 7 (generally known as buyouts) by submitting Subcontractor prices that are higher than the Contractor's actual known Subcontract costs. Each component of a Change Order proposal affecting the Contract Sum shall be supported by an underlying cost element and documentation evidencing actual costs. Where a Subcontract price has been obtained that is lower than what was submitted in an original Change Order proposal (for whatever reason or through whatever means), the Contractor shall pass along such savings to the Owner. If the lower price is obtained prior to the execution of a Change Order, such savings shall be incorporated into the proposed Change Order prior to execution. If a Change Order has already been executed, a deductive Change Order shall be issued to the Owner for the difference.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

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.

§ 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, except by instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The timing of all Work and material and equipment deliveries shall conform to the Project Schedule.

§ 8.2.4 The Owner and the Construction Manager shall have the right to modify the Project Schedule to vary the sequence or suspend, delay, or accelerate the commencement or execution of the Work. The Contractor shall transfer its laborers to such points as directed by the Construction Manager and execute such portions of the Work as may be required to enable Contractors to properly carry on their work without delay or interference.

§ 8.2.5 If the Contractor should (1) fail, refuse or neglect to supply a sufficient number of workers or deliver materials or equipment with such promptness as to prevent delay in the progress of the Work; (2) fail to commence and diligently prosecute the Work and proceed to the point to which the Contractor should have proceeded in accordance with the Project Schedule in order to achieve Substantial Completion in accordance with the Project Schedule; or (3) fail to commence, prosecute, finish, deliver or install the different portions of the Work in accordance with the Project Schedule, the Construction Manager shall have the right to direct the Contractor to prepare a written plan, for the Owner's approval, to accelerate the Work to comply with the Project Schedule, including, without limitation, providing additional labor, expediting deliveries of materials and equipment, performing overtime and/or resequencing the Work, without an increase in the Contract Sum. Upon the Owner's approval of the acceleration plan, the Contractor shall accelerate the Work in accordance with the plan. The Contractor shall compensate the Owner for, and indemnify the Owner against, all damages, losses and expenses, including additional compensation of the Construction Manager and the Architect, and attorney's fees, proximately resulting from the acceleration of Contractor's Work.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such the period of time lost on the critical path of Contractor's Work as shown on the Project Schedule ("Excusable Event of Delay"). The phrase "Excusable Event of Delay" does not include delays or disruptions in the performance of Work arising from or related to, in whole or in part: (1) inadequate construction forces or general labor shortages; (2) conditions within the Contractor's knowledge at the time of executing the Agreement, (3) inadequate labor forces,(4) failure of the Contractor to place orders for equipment or materials sufficiently in advance to insure timely delivery or (5) Contractor's failure to perform its Work in accordance with the Contract Documents..

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15. Claims requesting an increase in the Contract Time or the Contract Sum as a result of an Excusable Event of Delay shall be made in accordance with applicable provisions of Section 15.1.3, except that the Claim(s) must be made within five (5) days from the date that the Excusable Event of Delay begins. The Claim shall notify the Owner and Construction Manager, in writing, of all facts then available to the Contractor relative to the nature and extent of the Excusable Event of Delay, and its anticipated effect, (if any) upon the time or date established for Substantial Completion of the Work. Construction Manager will promptly acknowledge the Contractor's request for extension of time, but Construction Manager need not make a determination concerning the same until the nature and extent of the delay and its related impact upon the Contract Time for completion of the Work is determined. The Contract Time may be increased by Change Order as set forth in Section 15.1.6. The notice requirements of this Section are a condition precedent to the relief contemplated under Section 8.3 and if the Contractor fails to comply with these requirements, the Contractor shall be deemed to have waived the claim.
(Paragraph deleted)
§ 8.3.3. If the Contractor's Work or the Project is delayed by any act or omission of the Contractor or any person or entity for whom the Contractor is responsible, or by acts, omissions, events, or occurrences that are not a result of an Excusable Event of Delay, the Contractor shall (1) be assessed liquidated damages if provided for in the Contract, or (2) if liquidated damages are not provided for in the Contract, compensate the Owner for, and indemnify the Owner against, all damages, losses and expenses, including additional compensation of the Construction Manager and the Architect, and attorney's fees, proximately caused by such inexcusable delay.

§ 8.3.4 The Contractor's sole remedy for any delay or disruption in the commencement, prosecution, or completion of the Work, disruption to or interference with the performance of the Work, loss of productivity, or other similar claims, whether or not foreseeable, shall be an increase in the Contract Time pursuant to Sections 8.3.1 and 8.3.2 and an increase in the Contract Sum, but only for and to the extent of an increase in the Contractor's General Conditions directly associated with the increase in the Contract Time afforded under Sections 8.3.1 and 8.3.2. The Owner's, Construction Manager's, or the Architect's exercise of the right to make changes in the Work or to require the correction of damaged, defective or non-confirming Work shall not under any circumstances be construed an Excusable Event of Delay. In no event shall the Contractor be entitled to any compensation or the recovery of any damages in connection with any such claims, including consequential or incidental damages, lost opportunity costs, impact damages, or other similar remuneration. If the Contractor submits a progress report indicating, or the Contractor otherwise expresses an intention to achieve, completion of the Work prior to any completion date required by the Contract or expiration of the Contract Time, no liability of the Owner to the Contractor for any failure of the Contractor to so complete the Work shall be created, implied or permitted.

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.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Within fifteen (15) days of the Preconstruction Meeting, or as otherwise required by Division 1 of the Project Manual, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect, including a complete billing breakdown on AIA Form G-703, or similar form provided by the Construction Manager, prepared in such form and supported by such data as the Construction Manager or the Architect may require. The form shall be divided in detail sufficient to identify specific divisions of the Work and shall be updated as required by the Construction Manager to reflect (1) description of Work (listing labor and material separately), (2) total value, (3) percent of the Work completed to date, (4) value of Work completed to date, (5) percent of previous amount billed, (6) previous amount billed, (7) current percent completed, and (8) value of Work Completed to date. Any breakdown that fails to include sufficient detail is unbalanced or exhibits "front-loading" of the value of the Work, shall be rejected. Once approved by the Owner, these documents shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the

Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. Each subsequent Application for Payment must be accompanied by an updated billing breakdown. If a breakdown is approved and subsequently used but is later found improper for any reason, sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Work.

§ 9.3 Applications for Payment

§ 9.3.1 Based upon an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents. The Owner shall make progress payments to the Contractor as provided below and elsewhere in the Contract Documents. The period covered by each Application for Payment shall be one calendar month ending on the last day of the month. The Application for Payment must be prepared in duplicate on AIA Form G-732 and G-703, or similar form provided by the Construction Manager, and shall indicate the percentage of completion of each portion of the Work as the end of the period covered by the Application for Payment. Each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Construction Manager and Owner: (1) A lien waiver and duly executed and acknowledged sworn statement showing all Subcontractors, sub-subcontractors, and suppliers, the amount of each Subcontract, the amount requested for any Subcontractor and supplier in the requested progress payment, and the amount to be paid by the Contractor from such progress payment; (2) executed lien waivers from all Subcontractors, sub-subcontractors, and suppliers establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous Application for Payment; and (3) all information and materials required to comply with the requirements of the Contract Documents. Any detailed or supplemental information requested by the Construction Manager or the Architect shall be supplied by the Contractor.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 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 but payment to the Contractor for materials stored off site generally will not be recommended by the Construction Manager. Where circumstances indicate that the Owner's best interest will be served by payment for off-site storage, the Contractor shall make written request to the Construction Manager for approval to include such costs in the Contractor's next Application for Payment. The Contractor's request shall include the following information:

.1 A list of the fabricated materials (which shall be clearly identified), giving the place of storage together with copies of invoices and reasons why materials cannot be delivered to the Project site.

.2 Certification that the materials have been tagged for delivery to the Project and that they will not be used for another purpose.

.3 A letter from the Contractor's Surety indicating agreement to the arrangements and that payment to the Contractor shall not relieve either party of their responsibilities under the Contract Documents.

.4 Evidence of adequate insurance covering the material in storage which shall name the Owner as additional insured.

The costs incurred by the Construction Manager and Architect to inspect material in off-site storage shall be paid by the Contractor. 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 the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. If payment is made for materials or equipment stored off-site, title shall pass to the Owner, but the Contractor shall remain fully liable for all such material and equipment until incorporated in the Project.

§ 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 (1) all Work for which Applications for Payment have been previously recommended for payment 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, suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work, (2) the Work covered by the Application for Payment has been completed in accordance with the Contract Documents, (3) the current payment shown is now due, (4) except as set forth in the Application for Payment, no additional amounts are due, (5) all amounts have been paid by the Contractor for Work for which previous payments have been received, (6) the Contractor has complied with and paid all amounts due under federal, state and local tax laws, including social security, unemployment compensation and worker's compensation laws, and (7) the remaining balance of the Contract Sum is sufficient to complete the Work free and clear of all liens and encumbrances.

§ 9.4 Recommendations for Payment

§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a recommendation for payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a recommendation for payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding recommendation in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding recommendation.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and recommend the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and recommendation for payment; (4) recommend the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and recommendation for payment to the Architect.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project recommendation for payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project recommendation for payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding recommendation in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding recommendation in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding recommendation to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and recommendation for payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's recommendation will constitute a representation that, to the best of the Construction Manager's knowledge,

information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount recommended.

§ 9.4.4 The Architect's issuance of a recommendation for payment or, in the case of more than one Contractor, Project or a Project recommendation for payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount recommended.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 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 correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a recommendation for payment or a Project recommendation 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 construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and 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 Recommendation

§ 9.5.1 The Construction Manager or Architect may withhold a recommendation for payment or Project recommendation 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 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to recommend payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a recommendation for payment or a Project recommendation for payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a recommendation for payment or, because of subsequently discovered evidence, may nullify the whole or a part of a recommendation for payment or Project recommendation 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 for which the Contractor is responsible, including loss resulting from

- **.1** defective or nonconforming Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials, services 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 a Separate Contractor or other Contractor or other third-parties who could make a claim against the Owner;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time or a Milestone Date, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** failure to comply with the requirements of the Contract Documents or carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the reasons for withholding recommendation are removed, certification will be made for amounts previously withheld with the next Application for Payment that includes such amounts previously withheld.

§ 9.5.3 The Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier and charge such payment against the Contract Sum.

(Paragraph deleted)

§ 9.6 Progress Payments

§ 9.6.1 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 pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the 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 a similar manner. If any payment claim or lien is made or filed with or against the Owner or the Project, the Contractor shall, within twenty (20) days of the filing of the lien or submission of the claim, satisfy, discharge or bond-off the claim or lien, cause the Owner to be dismissed from any action which may be brought in connection with the claim or lien, and compensate the Owner for, and indemnify the Owner against, any and all losses, damages, and expenses, including attorney's fees, sustained or incurred by the Owner.

§ 9.6.3 The Construction Manager may, 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 The Contractor shall pay for all labor, materials, equipment and services through the period covered by the previous payment received from the Owner, and shall furnish satisfactory evidence, including (as a condition precedent to payment) releases and lien waivers on forms provided by the Owner, to verify compliance with this requirement. The Owner has the right to request additional written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to 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 Any payment, including 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.

§ 9.6.7 Payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor (unless required by applicable law), create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. The Contractor shall substitute a surety bond for the property against which the lien or other claim for payment has been asserted promptly upon the demand of the Owner. If Owner incurs any costs, expenses, damages, including reasonable attorneys' fees, to cause the release of any such lien, Contractor shall immediately reimburse Owner or said amounts shall be deducted from the Contract Sum.

§ 9.7 Failure of Payment

If the Owner does not pay the Contractor within fourteen (14) days after the date established in the Contract Documents, the amount due the Contractor, the Contractor may, upon fourteen (14) additional days' notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received.

§ 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 provided, however, that as a condition precedent to Substantial Completion, the Owner has received all certificates of occupancy and any other permits, approvals, licenses and other documents from any governmental authority having jurisdiction over the Project that are necessary for the beneficial occupancy and use of the Project.

§ 9.8.1 Project Closeout includes those activities leading to Substantial Completion and Final Completion of the Work. Project Closeout activities and requirements are specified in Division 1, Section 017700 – "Contract Closeout" of the Manual. To administer and conduct Project Closeout, the Contractor shall indicate a designated value as specified in Division 1, Section 012800 – Schedule of Values of this manual.

§ 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 shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. 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.

§ 9.8.3 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 sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion. If, upon the Architect's completion of the initial inspection, there remains incomplete or unsatisfactory Work, the Contractor will be back-charged for the time expended by the Architect and Construction Manager for additional inspections.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and 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.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of 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, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Construction Manager has assigned to the Owner and Contractor 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.

§ 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 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 shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final recommendation for payment or Project recommendation for payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final recommendation is due and payable. The Construction Manager's and Architect's final recommendation for payment or Project recommendation 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 (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 in the form of AIA Document G706, "Contractor's Affidavit of Payment of Debt and Claims," (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no 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 in the form of AIA Document G707, "Consent of Surety Company to Final Payment," (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and 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, (7) a certificate stating that no materials containing asbestos were incorporated into the Work, (8) all warranties, guarantees, record drawings, and other close-out documents required by the Contract Documents, and (9) such evidence as may be necessary to show that any out-of-state Subcontractor or supplier has fully met the requirements for payment of taxes as established by the laws of the state or local subdivision in effect at the time of final payment. 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, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance 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 the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 Final payment, including retainage or escrowed principal and escrowed income by the escrow agent, shall be paid to the Contractor no less than sixty (60) days following the date of Substantial Completion. If at that time there remain defective, non-conforming or incomplete items of Work, an amount equal to 200% of the value of each item as determined by the Construction Manager and Architect shall be withheld until said items are completed. 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 may, upon application by the Contractor , and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, 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 the 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.

§ 9.10.4

(Paragraphs deleted)

Acceptance of final payment by the Contractor, a Subcontractor, or a 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.

(Paragraph deleted)

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be solely 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. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 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, a Subcontractor, or a Sub-subcontractor;
- **.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, Separate Contractors, or other Contractors.
- **.5** excavations, trenches, buildings and grounds from all water damage, including the use of temporary drainage to keep excavations free of water
- **.6** benchmarks, monuments and other reference points affected by the Work, including re-establishment of benchmarks, monuments or other references point and the resetting of markers which are displaced or destroyed, all under the supervision of a licensed surveyor who shall furnish certificates of its work; and
- **.7** the structural components of the Project by assuring safe erection procedures and sequences and the use of temporary bracing, guys and tie-downs as may be prudent

The Contractor acknowledges that the safety of the Owner's students, employees, and guests is of the utmost importance. The Contractor shall take no action which would jeopardize the safety of the Owner's students, employees or guest and, shall take no action which would interfere with the Owner's activities, without the Owner's written approval.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss. In addition, the Contractor shall comply with the safety requirement of Division 1 of the Specifications and other safety requirements and regulations set forth elsewhere in the Contract Documents.

§ 10.2.3 The Contractor shall implement, 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 the owners and users of adjacent sites and utilities of the safeguards. The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any property and improvements adjacent to the Project. Any damage to such property or improvements shall be promptly repaired by the Contractor. Without limiting the indemnity provisions contained elsewhere in the Contract Documents, the Contractor shall indemnify and hold the Owner harmless from and against any and all actions or damages resulting from damage to such property or improvements.

§ 10.2.4 When use or 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. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is 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 and who shall cooperate with the Contractors or Separate Contractors to the extent necessary to promote Project safety. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect. A safety representative employed by the Owner or an insurer may, from time to time, conduct safety inspections and submit safety findings. The Contractor shall, at its expense, implement any abatement procedures recommended by such safety representative.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the 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 cause it to be 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 the material or substance or who are to perform the task of removal or safe containment of the 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. When the material or substance has been rendered harmless, Work in the affected area shall resume. By Change Order, the Contract Time shall be extended as set forth in Section 8.3.1 and the Contract Sum shall be increased as set forth in Section 8.3.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, 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 or substance presents the risk of bodily injury or death as described in Section 10.3.1 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), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 Hazardous material shall not be used without the prior written consent of the Construction Manager. If hazardous material are of a type of which an employer is required by law to notify its employees, Subcontractors or anyone directly or indirectly employed by them, the Contractor shall, prior to the possible exposure to such substances, give written notice of the detailed chemical composition thereof to the Construction Manager. The Contractor, in addition to products banned as part of the Clean Air Act (40 CFR 60, Subpart M), shall not use or bring on site materials containing more than 1% asbestos by content. No materials marked as "MAY CONTAIN MINERAL FIBERS" shall be used in construction unless written results of microscopic examination by an AIHA or NVLP certified laboratory documenting the asbestos content at less than 1% by weight are provided to the Construction Manager and approved before installation. If materials containing more than 1% asbestos content are brought onto the Project site by the Contractor, the materials shall be removed in accordance with all applicable laws and precautions so as not to make fibers friable. Removal of materials containing more than 1% asbestos and replacement of such materials shall be at the Contractor's expense. Prior to Final Payment, the Contractor shall submit to the Owner a signed and notarized copy of the following statement: "I hereby certify to the best of my knowledge no asbestos containing material (ACM) above 1% content was used as a building material for this Project." The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.3.7 A "hazardous material or substance" is any substance or material identified as hazardous under any federal state or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirement governing handling, disposal and/or cleanup.

§ 10.4 Emergencies

In an emergency affecting safety of 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 Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies rating A+ VII, A VII or A- VII by A. M. Best and lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager and Construction Manager's consultants, and the Architect and Architect's consultants, shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 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 authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required

by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

(Paragraphs deleted)

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner 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 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

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 requested in writing by either, be uncovered for their examination 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 that the Construction Manager or Architect has not specifically requested to examine 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, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense. If the Contractor fails to correct defective or non-conforming Work within two (2) calendar days after receipt of written notice from the Owner, the Construction Manager or the Architect, the Owner may make good the deficiencies and the cost shall be charged to the Contractor. If payments due the Contractor are not sufficient to cover the cost, the Contractor shall pay the difference to the Owner.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, 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 any 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 notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work 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 completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

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

§ 12.2.5 Nothing contained in this Section 12.2 or the Contract Documents shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 and Section 3.5 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

If the Owner prefers to accept Work that 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. The acceptance of nonconforming Work by the Owner shall be by written Change Order, signed by the Owner's authorized representative. No other person or entity has authority to accept nonconforming Work.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Except as expressly provided in the Contract Documents, 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.

§ 13.3.2 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 upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. 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 that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become

requirements until the effective date of the Contract. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 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 13.4.1, 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 that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, 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, shall be at the Contractor's expense. The Contractor also agrees that the cost of testing services required for the convenience of the Contractor in its scheduling and performance of the Work, and the cost of testing services related to remedial operations performed to correct deficiencies in the Work, shall be borne by the Contractor.

§ 13.4.4 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 and the Construction Manager.

§ 13.4.5 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.

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

§ 13.4.7 Neither the observations of the Architect nor Construction Manager in their administration of the Contract Documents, nor inspections, tests or approvals by persons other than the Contractor shall relieve the Contractor of its obligation to perform the Work in accordance with the Contract Documents.

§ 13.5 Interest

Unless otherwise expressly provided in the Contract Documents, payments due and unpaid under the Contract Documents shall bear no interest. If interest is expressly provided for in the Contract Documents, then such interest shall apply only with respect to liquidated and undisputed payment amounts due, and shall only accrue from and after the tenth (10^{th}) day following the Owner's receipt of a notice containing an express statement by the Contractor of its intention to assess interest. In the event the Owner is entitled to withhold payment under the Contract Documents or by law, or in the event of a good faith dispute between the Owner and the Contractor, no interest shall accrue.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped; or

.2 An act of government, such as a declaration of national emergency, that requires all Work to be

(Paragraphs deleted)

stopped.

(Paragraph deleted)

§ 14.1.3 If one of the reasons described in Section 14.1.1 exists, the Contractor may, upon seven days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for the cost of the Work executed and accepted, as well as reasonable overhead and profit on Work executed and accepted by Owner,

and actual costs incurred solely by reason of such termination. Recovery by the Contractor of lost anticipated profits and other incidental or consequential damages are specifically excluded.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repeatedly 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' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents;
- **.5** fails in any material respect to prosecute the Work according to Project Schedule or causes delay to, disruption of, or interference with the work of any other Contractor; or
- **.6** files bankruptcy or makes a general assignment for the benefit of creditors, or if a receiver is appointed over the Contractor.

In the event any termination of the Contractor for default is later determined to have been improper, the termination shall automatically convert to a termination for convenience, and the Contractor shall be limited in its recovery strictly to the compensation provided for in Section 14.4.3 below.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager or the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, forty-eight (48) hours' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 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 (including reasonable attorneys' fees) made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The 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 upon forty-eight (48) hours written notice to the Contractor. The Contractor shall resume the Work as directed by the Owner or the Construction Manager. If the Project is resumed after being suspended for more than ninety (90) days, the Contract Sum shall be equitably adjusted.

(Paragraphs deleted)

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed, plus a reasonable markup for overhead and profit on Work performed and accepted. The Contractor shall make its records available for the Owner's, the Construction Manager's and the Architect's review; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by the Contractor seeking, as a matter of right, payment of money, a change in the Contract 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. The responsibility to substantiate Claims shall rest with the Contractor. This Article 15 shall not grant or enlarge upon the Contractor's right to make claims that are otherwise modified, disclaimed or waived by the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 The Contractor shall make all claims for an increase in the Contract Sum or the Contract Time in accordance with the Contract Documents and in strict compliance with the procedures provided below. If the Contractor claims that it is entitled to additional sums or time, for any reason whatsoever, the Contractor shall give the Owner, the Construction Manager and the Architect written notice of the claim within ten (10) days after the occurrence giving rise to the claim or within ten (10) days after the Contractor first recognizes the condition giving rise to the claim, whichever is later. The notice of the claim shall set forth the circumstances giving rise to the claim, and to the extent reasonably available, facts, documents, backup data and other information supporting the claim and the relief sought. Failure by the Contractor to provide written notice of the claim shall result in a waiver of the claim. Within thirty (30) days after providing written notice of a claim, the Contractor shall submit complete support for the claim including, without limitation, documents, backup data and other information supporting the claim, the relief sought, and those persons with knowledge of the claim. No additional sums shall be paid to the Contractor, and no additional time shall be granted or recognized, unless the Contractor has received a written Change Order signed by the Owner, the Construction Manager and the Architect. VERBAL CHANGES OR EXTRAS SHALL NOT BE VALID OR ENFORCEABLE.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15.

§ 15.1.5 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 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.

§ 15.1.6.2 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, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.1.8 The Contractor shall not knowingly present or cause to be presented a false or fraudulent Claim. As a condition precedent to making a Claim, the Claim shall be accompanied by an affidavit sworn to before a notary public or other person authorized by law to administer oaths and executed by an authorized representative of the Contractor which states stat: "This Claim complies with Article 15 of the General Conditions, which provides that the Contractor shall not knowingly present or cause to be presented a false or fraudulent Claim."

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Construction Manager will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. The Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract shall be subject to mediation as a condition precedent to litigation.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation.

(Paragraph deleted)

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraphs deleted)

ARTICLE 16 EQUAL OPPORUNITY

§ 16.1 The Contractor and Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex, or national origin. Such action shall include, but not be limited to, 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 setting forth these policies of non-discrimination.

§ 16.2 The Contractor and Subcontractors shall, in solicitations or advertisements for employees placed by them or on their behalf, state that qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.

SECTION 01 12 00 - MULTIPLE CONTRACT SUMMARY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of the Prime Contract, including amended General Conditions and other Division 1 Specification Sections, apply to Work of this Section.

1.02 SUMMARY

A. The intent of this Section is to indicate the Work required by the Contractors and to provide information regarding the duties, responsibilities, and cooperation required by the Contractors, with similar requirements for the subcontractors and suppliers.

B. Owners right to maintain current operations

C. Occupancy requirements

D. Work by Owner

E. Permits, fees, and notices

F. Labor and materials

G. Verifications of existing dimensions

H. Project security

I. Coordination of work

J. Time of commencement and completion

K. Schedule of contract responsibilities

1.03 WORK UNDER SEPARATE CONTRACTS

A. Prime Contracts are defined to include the following contracts described in the Schedule of Contract Responsibilities included hereinafter; and each is recognized to be a major part of the project, with Work to be performed concurrently and in close coordination with Work of other Prime Contracts.

B. The "Contract Documents," as defined in the General Conditions, include "the Drawings." Although Drawings are grouped and identified by classification of the Work, Contractors shall be responsible for their Work as specified herein and as

indicated on the Drawings. Although the majority of the Drawings are "to scale," Contractors are directed to use indicated dimensions for determining material quantities and for other reasons. No additional monies will be allowed due to Contractors using "scaling instruments" to determine material quantities or for other reasons.

C. Separate prime contracts will be awarded as per the **"Schedule of Contract Responsibilities"** (see Part 3 – Execution). Contractors shall include Work required by the Specifications and Drawings for each contract area defined in the Schedule.

D. Work for the complete construction of the Project will be under multiple prime contracts with the Owner. The Construction Manager will manage the construction of the Project.

E. Each Contractor shall be responsible for demolition and disposal of existing items relative to his Contract.

1.04 ADMINISTRATIVE RESPONSIBILITIES OF PRIME CONTRACTORS AND CM

A. The Construction Manager shall be responsible for the maintenance of the Construction Schedule and management of every phase of the Work.
   1. Each Contractor shall read the Specifications and Drawings for other separate Contracts for fixed equipment and the like to be incorporated or attached or built into the Work; and familiarize himself with the requirements and responsibilities of other Contracts to enable the required coordination and supervision.
   2. Each Contractor shall also familiarize himself with other items to be incorporated into the Work including equipment and Work by the Owner.
   3. Each Contractor shall cooperate with the Construction Manager in notifying him when the Work is at a stage to require the services of other Contractors and shall notify the Construction Manager in the event that such other Contractors do not carry out their responsibilities in connection with such notification.

B. Contractors shall cooperate with and assist the Construction Manager in the preparation of construction progress and procedures, schedule of product deliveries, and their effect on the overall project progress and completion. Other Contractors shall cooperate in getting their Work and the Work of their subcontractors completed according to the schedule as prepared and maintained by the Construction Manager. Each Contractor shall immediately notify the Construction Manager of a delay in delivery of products or the scheduled date of completion that may affect the total progress of construction.

C. The Owner will furnish the topographical survey, either as a part of these Drawings or separately, giving the general topographical lines existing at the site and the property lines.

D. Contractors required to make connections to existing utilities, especially sewerage where gravity flow occurs, shall verify grades and locations at points of such connections and shall notify the Construction Manager of circumstances which would adversely affect the proper flow or connection to such facilities.

1.05 PRIME CONTRACTORS USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.
   1. Owner Occupancy: Allow for Owner occupancy and use by the public.
   2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

B. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.06 OWNERS RIGHT TO MAINTAIN OPERATIONS

A. During the course of this Project, normal and customary functions and operations must be maintained. The Contract Documents are intended to define a strict separation between the school activities of students and staff from the activities of the construction project.

B. The Construction Manager, Architect, and Owner will not tolerate any visible or audible actions initiated or responded to by any employees of Contractors on this Project toward any students, teachers, or staff members at the school system. Violators shall be promptly removed from the site.

C. The Owner intends to instruct students, teachers, and staff to refrain from communications with Contractor's personnel working on this Project. All communication with Owner and staff shall be through the Construction Manager.

D. Contractors must expend their best effort toward protection of the health, safety, and welfare of occupants on the Owner's property during the course of Work on this Project.

E. Contractors and Subcontractors shall be subject to such rules and regulations for the conduct of the Work as the Owner may establish. Employees shall be properly and completely clothed while working. Bare torsos, legs and feet will not be allowed. Possession or consumption of alcoholic beverages or drugs, tobacco or other noxious behavior on the site is strictly prohibited. Violators shall be promptly removed from the site. Smoking is not permitted on school property or within school buildings.

1.07 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.

B. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Construction Manager will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.
2. Party which obtained general building permit shall obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions of the building.
4. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.

1.08 WORK BY OWNER

A. The Owner intends to complete the following items of Work outside the provisions of these Contract Documents. Contractors shall not restrict or interfere with the Owner's right to the Project to accomplish this Work.

1. Equipment and furniture except as scheduled and specified under Divisions 11 and 12 and shown on the Drawings.
2. Items which may be deleted from Contracts for Work as required by the Contract Documents.
3. Existing school maintenance work.

4. The purchase and supplying of certain materials as noted in the Project Manual.
5. The Owner, under separate contract, shall provide removal of identified asbestos containing materials from the existing structure. The asbestos report is available through the Construction Manager upon request.

1.09 PERMITS, FEES, AND NOTICES

A. The Construction Manager, though Edwardsburg Public Schools, will secure the general building permit for the project. The General Trades Bid Category will coordinate all required building inspections with the Construction Manager. Each Contractor shall secure and pay for other permits, governmental fees, and licenses necessary for the proper execution and completion of the Contractors Work. Fees to relocate utilities on Owner's property shall be included in the bid of the Contractor doing the relocation.
   1. The Owner shall pay for the cost of the Building Permit.
   2. State filing fees for plan approval are the responsibility of the Owner and will be paid by the Owner.

B. Utility Tie-Ins: Shall be arranged with local utility company and other involved parties for minimum interruption of service.

C. Shutdowns of existing systems shall be limited to minimum time required and scheduled with other involved parties. Provide 5 days written notice of shutdown to Construction Manager and Owner.

D. Inspections of installed work shall be performed by the governing authority as arranged for by the Contractor. Work shall not be covered until approved.

E. Each Contractor shall give notices and comply with laws, ordinances, rules, regulations, and orders of public authorities bearing on the performance of his Work. If a Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Construction Manager in writing, and necessary changes shall be adjusted by appropriate notification. If a Contractor performs Work knowing it to be contrary to such laws, ordinances, rules, and regulations, and without such notice to the Construction Manager, he shall assume full responsibility therefore and shall bear the costs attributable thereto.

1.10 LABOR AND MATERIALS

A. Unless otherwise specifically noted, 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 the proper execution and completion of his Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

B. Each Contractor shall enforce strict discipline and good order among his employees or other persons carrying out Work of his Contract and shall not permit employment of unfit person or persons or anyone not skilled in the task assigned to them.

C. Prime Contractors must furnish a letter to the Construction Manager, stating that Contractor shall not assign any of its employees, agents or other individuals to perform any services in the District's facilities or program sites if that individual:
1. Is listed on the Michigan Sex Offender Registry, www.mipsor.state.mi.us.
2. Is listed on the Federal Sex Offender Registry www.nsopw.gov.
3. Has not passed a 5-50 drug screen, testing negative for the following drugs:
   a. Amphetamines
   b. Methamphetamines
   c. Cocaine
   d. Codeine
   e. Methadone
   f. Morphine
   g. Phencyclidine (PCP)
   h. Marijuana

D. ID Stickers will be issued by The Skillman Corporation upon receipt of verification from the Contractor that the employee/subcontractor employee or independent contractor has a satisfactory record to work on the Project. Stickers will be numbered and numbers assigned to each worker to be worn on their hardhat. It is the Contractor's responsibility to maintain a record of contractor's name assigned each number and provide to The Construction Manager upon request.

E. Consistent with Michigan law, possession or consumption of drugs on school property will promptly be reported to the local police. Consumption of alcoholic beverages or tobacco or other noxious behavior on school owned property is strictly prohibited. Violators shall be promptly removed from the site. Smoking is not permitted on school property or within school buildings.

1.11 CUTTING AND PATCHING

A. Refer to Section 01 73 10 – Cutting and Patching, for provisions on this subject.

1.12 VERIFICATIONS OF EXISTING DIMENSIONS

A. When verification of existing dimensions is required, the Contractor requiring said verification for the construction or fabrication of his material shall be the Contractor responsible for the procurement of the field information.

1.13 PROJECT SECURITY

A. Each Prime Contractor shall take all reasonable precautions to prevent injury, damage or loss to people and property in, on and adjacent to the project. This shall

include not only their own work or property but that of other contractors and the Owner.

B. If deemed necessary by The Construction Manager a project wide security program may be developed for the purpose of preventing damage or loss at the project site or property adjacent thereto. Once accepted by the Owner, contractors shall comply.

1.14 SCHEDULE OF CONTRACT RESPONSIBILITIES - SCOPE

A. Contractors shall submit their proposals based on the work included under each contract area as listed herein. Include Work necessary for a complete project, as shown on the Drawings and called for in the Specifications.

B. Questions concerning the phasing or "Schedule of Contract Responsibilities" should be directed to the Construction Manager, who will be the interpreter and be responsible for this Schedule of Contract Responsibilities and Contract Breakdown, prior to submitting proposals and during construction.

C. The requirements of Division 1 are a part of the Work of each and every contract area. The Contractor for any one contract area shall be familiar with the Work and requirements of all other contract areas.

D. Certain Specification Sections describe Work to be performed under several contract areas. (Example: 06 10 00 - Rough Carpentry.) Provide Work of this nature as required for each contract area whether or not enumerated in the Schedule of Contract Responsibilities.

E. The following contract areas are broken down by Specifications Section conforming basically to the CSI format.

F. The Drawings and Specifications as furnished for each of the Contracts is for the convenience of the Contractor in preparing a proposal for this Project. However, each Contractor is responsible to review the complete set of Drawings and Specifications to assure that Work required to be installed to complete his phase of the Work is included in his proposal. This "Schedule of Contract Responsibilities" is a definition of the work as it is to be bid in separate contracts. Where a specific item of Work is not defined, but is normally inherent to a trade, or is included in the scope of the applicable technical revision, it will be the responsibility of that Contractor to include the Work in his proposal.

G. This "Schedule of Contract Responsibilities" is to aid each Contractor in defining the Scope of Work to be included in his proposal. However, omissions from this "Schedule of Responsibilities" do not relieve the Contractor from including in his proposal that Work which will be required to complete his Contract. Each Contractor should read the "Schedule of Contract Responsibilities" completely to familiarize himself with the Work of other Contractors that may have Work in

adjacent areas and to coordinate the interfacing problems that may occur as the work is assembled and constructed.

H. Where specific Work is to be completed under a particular phase of the Project and the Work is wholly or partially completed by other trades because of the type of work involved or jurisdictional trade agreements, the Contractor will be responsible to subcontract the Work as necessary to complete the Work included in his Contract. No delay in the Work will be allowed due to the failure of the Contractor to subcontract related work required by jurisdictional trade agreements.

1.15 COORDINATION OF WORK

A. Each Contractor is responsible to coordinate his Work with the Work of other trades and other Contractors and requirements of the school system. The Contractor must make space allowances for Work of other Contractors, provide necessary openings where indicated or implied by the Drawings and Specifications. Each Contractor is responsible to protect his own Work.

1.16 TIME OF COMMENCEMENT AND COMPLETION

A. The Contractor shall commence work, including submittal and material procurement, within fifteen (15) days after being notified in writing to proceed and shall complete the Work within the time limitations established in the Form of Agreement.
   1. It is anticipated that construction will start within **75** calendar days after receipt of bids.
   2. Construction shall be complete within **153** consecutive calendar days, or earlier, after Notice to Proceed.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 SCHEDULE OF CONTRACT RESPONSIBILITIES

3.02 GENERAL REQUIREMENTS

A. PROVIDED BY OWNER THROUGH THE CONSTRUCTION MANAGER

Section	01 32 00	Schedules and Reports
Section	01 45 00S	Masonry Inspection Report
Section	01 45 10	Testing Laboratory Services
Section	01 71 50	Final Cleaning

B. PROVIDED BY ALL CONTRACTORS AS APPLICABLE

Section	01 12 00	Multiple Contract Summary
Section	01 2 300	Alternates
Section	01 25 00	Contract Modification Procedures

Section	01 28 00	Schedule of Values
Section	01 29 00	Applications for Payment
Section	01 31 00	Project Meetings
Section	01 32 00	Schedules and Reports
Section	01 33 00	Submittal Procedures
Section	01 45 10	Testing Laboratory Services (Paragraph 1.05)
Section	01 50 50	Temporary Facilities and Controls
Section	01 54 60	Environment Protection
Section	01 54 80	Utility Protection
Section	01 56 30	Water Control
Section	01 56 90	Housekeeping & Safety
Section	01 59 20	Offices and Sheds
Section	01 60 00	Product Requirements
Section	01 72 50	Work Layout
Section	01 73 10	Cutting and Patching
Section	01 77 00	Contract Closeout

Autodesk Build does not require users to purchase a license. **Contractors** will be invited to the project and required to use this tool. **Autodesk Build** will be used as the **Current Set** and **As-Built Record Drawings.** Additionally, it will be used to track **Issues** for **Safety**, **QA/QC**, **Non-Compliance**, **Work Completion,** and **Punch List**.

C. PROVIDED BY DESIGNATED CONTRACTORS

Section	01 21 00	Allowances
Section	02 41 19	Selective Demolition
Section	01 51 10	Temporary Electricity, Lighting and Warning Systems
Section	01 51 30	Temporary Heating, Ventilation and Cooling
Section	01 51 50	Temporary Water
Section	01 51 60	Temporary Sanitary Facilities
Section	01 51 80	Temporary Fire Protection
Section	01 52 10	Construction Aids and Temporary Enclosures
Section	01 52 60	Rubbish Container
Section	01 53 10	Fences (Temporary Security)
Section	01 57 60	Project Signs
Section	01 91 13	General Commissioning

3.03 BID CATEGORIES

A. BID CATEGORY NO. 01 – GENERAL TRADES

General Requirements in Paragraph 3.02.B above.

Section	01 21 00	Allowances
Section	01 51 60	Temporary Sanitary Facilities
Section	01 51 80	Temporary Fire Protection
Section	01 52 10	Construction Aids and Temporary Enclosures

Section	01 52 60	Rubbish Container
Section	01 53 10	Fences (Temporary Security)
Section	01 57 23	Temporary Stormwater Pollution Controls
Section	01 57 60	Project Signs Section
Section	02 41 19	Selective Demolition
Section	03 20 00	Concrete Reinforcing
Section	03 30 00	Cast-in-Place Concrete
Section	04 05 11	Masonry Mortaring And Grouting
Section	04 20 00	Unit Masonry
Section	05 12 00	Structural Steel Framing
Section	06 10 00	Rough Carpentry
Section	06 40 23	Interior Architectural Woodwork
Section	06 41 16	Plastic-Laminate-Faced Architectural Cabinets
Section	06 61 16	Solid Surfacing Fabrications
Section	07 54 16	Ketone Ethylene Ester - Kee Roofing
Section	07 71 00	Roof Specialties
Section	07 84 13	Penetration Firestopping
Section	07 84 43	Joint Firestopping
Section	07 92 00	Joint Sealants
Section	08 11 13	Hollow Metal Doors And Frames
Section	08 12 43	Fire-Resistance-Rated Frames
Section	08 14 16	Flush Wood Doors
Section	08 41 13	Aluminum-Framed Entrances And Storefronts
Section	08 80 00	Glazing
Section	08 88 13	Fire-Rated Glazing
Section	09 22 16	Non-Structural Metal Framing
Section	09 29 00	Gypsum Board
Section	09 30 00	Tiling
Section	09 51 13	Acoustical Panel Ceilings
Section	09 65 13	Resilient Base And Accessories
Section	09 68 13	Tile Carpeting
Section	09 91 23	Interior Painting
Section	09 96 00	High-Performance Coatings
Section	10 11 00	Visual Display Units
Section	10 14 19	Dimensional Letter Signage
Section	10 28 00	Toilet, Bath, And Laundry Accessories
Section	10 44 13	Fire Protection Cabinets
Section	10 44 16	Fire Extinguishers
Section	12 24 13	Roller Window Shades
Section	12 36 23.13	Plastic-Laminate-Clad Countertops
Section	12 36 61.16	Solid Surfacing Countertops
Section	22 05 33	Heat Tracing For Plumbing
Section	31 00 00	Earth Work
Section	32 13 00	Cement Concrete Pavement
Section	33 42 00	Stormwater Conveyance

B. BID CATEGORY NO. 02 - MECHANICAL

General Requirements in Paragraph 3.02.B above.

Section	01 21 00	Allowances
Section	01 51 30	Temporary Heating, Ventilation and Cooling
Section	01 51 50	Temporary Water
Section	01 91 13	General Commissioning Requirements
Section	02 41 19	Selective Demolition
Section	21 05 00	Common Work Results For Fire Suppression
Section	21 13 00	Fire-Suppression Sprinkler Systems
Section	22 05 29	Hangers And Supports For Plumbing Piping And Equipment
Section	22 05 53	Identification For Plumbing Piping And Equipment
Section	22 07 19	Plumbing Piping Insulation
Section	22 10 05	Plumbing Piping
Section	22 30 00	Plumbing Equipment
Section	22 40 00	Plumbing Fixtures
Section	23 05 17	Sleeves And Sleeve Seals For HVAC Piping
Section	23 05 23	General-Duty Valves For HVAC Piping
Section	23 05 29	Hangers And Supports For HVAC Piping And Equipment
Section	23 05 48	Vibration And Seismic Controls For HVAC
Section	23 05 53	Identification For HVAC Piping And Equipment
Section	23 05 93	Testing, Adjusting, And Balancing For HVAC
Section	23 07 13	Duct Insulation
Section	23 07 19	HVAC Piping Insulation
Section	23 09 93	Sequence Of Operations For HVAC Controls
Section	23 21 13	Hydronic Piping
Section	23 21 14	Hydronic Specialties
Section	23 31 00	HVAC Ducts And Casings
Section	23 33 00	Air Duct Accessories
Section	23 37 00	Air Outlets And Inlets
Section	23 81 00	Vertical Unit Ventilator
Section	23 82 00	Convection Heating And Cooling Units

C. BID CATEGORY NO. 03 - ELECTRICAL

General Requirements in Paragraph 3.02.B above.

Section	01 21 00	Allowances
Section	01 51 10	Temporary Electricity, Lighting and Warning Systems
Section	01 57 23	Temporary Stormwater Pollution Controls
Section	01 91 13	General Commissioning Requirements
Section	02 41 19	Selective Demolition
Section	26 00 10	Supplemental Requirements For Electrical
Section	26 05 05	Selective Demolition For Electrical

Section	26 05 19	Low-Voltage Electrical Power Conductors And Cables
Section	26 05 26	Grounding And Bonding For Electrical Systems
Section	26 05 29	Hangers And Supports For Electrical Systems
Section	26 05 33.13	Conduit For Electrical Systems
Section	26 05 33.16	Boxes For Electrical Systems
Section	26 05 33.23	Surface Raceways For Electrical Systems
Section	26 05 53	Identification For Electrical Systems
Section	26 05 83	Wiring Connections
Section	26 09 23	Lighting Control Devices
Section	26 24 16	Panelboards
Section	26 27 26	Wiring Devices
Section	26 28 13	Fuses
Section	26 28 16.13	Enclosed Circuit Breakers
Section	26 28 16.16	Enclosed Switches
Section	26 51 00	Interior Lighting
Section	28 46 00	Fire Detection And Alarm

END OF SECTION 01 12 00

EPS Intermediate and Primary Renovation - Pre-Bid RFI Log

Date - 03.13.2025

RFI #	Company Submitting RFI	Date Received	RFI Description	RFI Response
1	S.A. Morman	2.25.25	There is no Hardware Spec. or Sets provided. Please provide asap.	**TP:** These specifications were added in Addendum #01.
2	S.A. Morman	2.25.25	Intermediate School openings B121A and B123C on A101B First Floor Plan Unit B are shown with Keyed Notes-Architectural-Construction #2 stating that the Exiting Frames are to Remain. Door Schedule on A501 appears to show new HM frames. Please clarify.	**TP:** Door frames are to remain.
3	S.A. Morman	2.25.25	Primary School Openings A144B and A145 are wood doors noted with a 20 min. fire rating. Remark #2 on the notes states that these doors are to have a 45 min. fire rating. Please clarify.	**TP:** Correct, provide 45 min glazing at these doors.
4	S.A. Morman	2.25.25	Specifications include section 08 12 43 - Fire-Resistant-Rated Frames. It does not appear that these specifications are applicable to any hollow metal frames on the door schedule. Please verify.	**TP:** This is for the aluminum fire-resistant rated frames on the projects. Refer to 08 1113 Hollow Metal Doors and Frames for rated HM frames.
5	S.A. Morman	2.25.25	Code compliance plan does not indicate any new fire cabinets or extinguishers for each project. Please confirm that this is correct.	**TP:** Correct, nothing new. Relocating fire extinguisher cabinet at the Intermediate school.
6	Gibson-Lewis	3/4/2025	How should the ceiling in the Conference Room be supported during the demolition and rebuild of the soffits?	TSC: It is acceptable to add pop-rivets to adjacent walls and add ceiling wire to temporary hold up the grid while soffit demo takes place.
7	Gibson-Lewis	3/4/2025	The Primary Office area appears to have a second metal panel ceiling above the existing grid ceiling. Does the new CMU corridor wall stop at that secondary metal panel ceiling or extend above?	**TP:** Walls shall extend to bottom of deck and bulkheads will need to be attached and supported by framing above. Remove any existing secondary ceiling.
8	TSC	3/6/2025	Clarify installation of roofing heat trace.	**TSC:**Bid Category #3 - Electrical shall disconnect the roofing heat trace prior to demolition by Bid Category #1 - General Trades. Bid Category #1 - General Trades shall furnish and install the new heat trace as indicated on drawing A102. Bid Category #3 - Electrical will provide final connections and testing.
9	EMC	3/6/2025	Please provide electrical demo and installation information regarding the roofing heat trace scope of work. Please clarify panel schedule and required circuiting information.	**TP:**Adding sheet E302 in Addendum #02 clarifying electrical scope of work with regards to heat trace system modifications, reusing existing heat trace circuits for new heat trace cables of similar length and wattage.
10	TSC	3/6/2025	Please revise the alternate language on the cover page to mention the alternate work shown on the Civil Plans as well.	**TP:**Added language to include civil drawings in addendum #02.
11	TSC	3/13/2025	Please add specifications and contractor responsibility for the concrete and sitework shown on the C plans.	**TP:** Sitework specifications added in Addendum #02. **TSC:** Bid Category #1 - General Trades shall be responsible for all concrete, underground drainage, and misc. sitework shown on the Civil Plans.

TowerPinkster
Architecture · Engineering · Interiors

ADDENDUM NO. 2

DATE OF ISSUANCE: **March 13, 2025**

PROJECT: **Edwardsburg Intermediate School - Renovation**
69410 Section St
Edwardsburg, MI 49112

OWNER: **Edwardsburg Public Schools**

ARCHITECT'S PROJECT NO.: 21-201.030

ORIGINAL BID ISSUE DATE: February 10, 2025

SCOPE OF WORK

This Addendum includes changes to, or clarifications of, the original Bidding Documents and any previously issued addenda, and shall be included in the Bid. All of these Addendum items form a part of the Contract Documents. The Bidder shall acknowledge receipt of this Addendum in the appropriate space provided on the Bid Form. Failure to do so may result in disqualification of the Bid.

DOCUMENTS INCLUDED IN THIS ADDENDUM

This Addendum includes **2** pages of text and the following documents:

- Bidding Documents: **None**
- Contract Conditions: **None**
- Specification Sections: **01 5723, 22 0533, 28 1300, 31 0000, 32 1300, 33 4200**
- Drawings: **G 001, AD 102, A 102, E 302**

CHANGES TO PREVIOUSLY ISSUED ADDENDA

See ADD-2 Item No. S-1

CHANGES TO SPECIFICATIONS

ADD-2 Item No. S-1 - Removed Galaxy Access Control Controllers and Sub Contractor Requirements

Refer to Specification Section: 28 1300

Removed Galaxy Access control components. The system should be a complete DMP system. Also removed the requirement to sub contract Koorsen Fire and Security.

ADD-2 Item No. S-2 - Added Heat Tracing Specification

Refer to Specification Section: 220533

Added Heat Tracing specification for replacement of existing heat tracing cables shown in drawings AD 102 and A 102.

ADD-2 Item No. S-3 - Added Civil Specifications

Refer to Specification Sections: 01 5723, 31 0000, 32 1300, 33 4200

Added spec sections pertaining to the civil scope of work

CHANGES TO DRAWINGS

ADD-2 Item No. D-1 - Alternate 1 text modified

Refer to Sheet(s): G 001

Included text to reference also civil drawings for alternate 1.

ADD-2 Item No. D-2 - Modifications to Heat Trace System

Refer to Sheet(s): AD 102

Removed a portion of heat trace system demo from plan. Added a portion of heat trace system demo.

ADD-2 Item No. D-3 - Heat Trace System

Refer to Sheet(s): A 102

Added additional notes to heat trace system areas

ADD-2 Item No. D-4 - Added sheet E302

Refer to Sheet(s): New Sheet E302

Added electrical scope for roof and piping heat trace system modifications.

END OF ADDENDUM.

SECTION 01 5723 – TEMPORARY STORMWATER POLLUTION CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This work consists of temporary measures needed to control erosion and water pollution. These temporary measures will include, but not be limited to, berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods. These temporary measures shall be installed at the locations where needed to control erosion and water pollution during the construction of the project and during site restoration, and as directed by ENGINEER, and as shown on the drawings.

B. The Erosion Control Plan presented in the drawings serves as a minimum for the requirements of erosion control during construction. Contractor has the ultimate responsibility for providing adequate erosion control and water quality throughout the duration of the project. Therefore, if the provided plan is not working sufficiently to protect the project areas, then Contractor shall provide additional measures as required to obtain the required protection.

1.2 RELATED SECTIONS

A. Section 31 0000 – Earthwork

B. Section 32 1216 – Asphalt Paving

C. Section 32 1313 – Concrete Paving

D. Section 32 9219 – Seeding

E. Section 33 4000 – Storm Drainage Utilities

1.3 REFERENCES AND STANDARDS

A. DOT –Department of Transportation

1.4 SUBMITTALS

A. Submit under provisions of Division One specifications.

B. Submit the following information:

1. Stormwater Management Plan,
2. Construction schedule for Erosion Control per Article Scheduling,
3. Sequencing Plan per Article Scheduling,
4. All applicable permits for Erosion and Sedimentation Control.

C. Product data: Submit on all products or materials supplied herein.

1.5 REGULATORY REQUIREMENTS

A. Obtain and comply with all requirements of Cass County and Michigan Stormwater and/or Groundwater Discharge Permits, as required.

B. In the event of conflict between these requirements and erosion and pollution control laws, rules, or regulations of other Federal, State, or local agencies, the more restrictive laws, rules, or regulations shall apply.

1.6 SCHEDULING

A. Sequencing Plan:
   1. Contractor shall submit a sequencing plan for approval for erosion control in conformance with Contractor's overall Construction Plan for approval by Cass County.
   2. Changes to the Erosion Control Sequencing Plan may be considered by Cass County only if presented in writing by the Contractor.

B. Temporary Erosion Control:
   1. When so indicated in the Contract Documents, or when directed by Cass County. Contractor shall prepare construction schedules for accomplishing temporary erosion control work including all maintenance procedures.
   2. These schedules shall be applicable to clearing and grubbing, grading, structural work, construction, etc.

C. Contractor shall submit for acceptance the proposed method of erosion control on haul roads and borrow pits and a plan for disposal of waste material.

D. Contractor shall be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the accepted schedule. Temporary erosion control measures shall then be used to correct conditions that develop during construction.

E. Work shall not be started until the erosion control schedules and methods of operations have been accepted.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with all applicable municipal or local Municipal Separate Storm Sewer System (MS4) requirements.

B. All materials shall be submitted for approval prior to installation.

C. Natural or biodegradable materials shall be reasonably clean, free of deleterious materials, and certified weed free. Materials may include, but are not limited to, hay bales, straw, fiber mats, fiber netting, wood cellulose, fiber fabric, gravel.

D. Grass Seed:
   1. Temporary grass cover (if required) shall be a quick growing species, suitable to the area, in accordance with local criteria and permit requirements, which will provide temporary cover, and not compete with the grasses sown for permanent cover.

2. All grass seed shall be in accordance with local regulations prior to installation.

E. Fertilizer and soil conditioners shall be in accordance with local regulations prior to installation.

F. Silt Fence Fabric: woven polypropylene
   1. Mirafi 100X, "Envirofence"
   2. Or accepted substitution

G. Temporary Slope Stabilization Mat (short term): 1.5 pound photodegradable polypropylene top and bottom nets, 100% straw fiber matrix, with a longevity of 12 months.
   1. North American Green S150
   2. Or accepted substitution

H. Temporary Slope Stabilization Mat (extended term): 3.0 pound UV-stable polypropylene top net, 1.5 pound photodegradable polypropylene bottom net, 70% straw/30% coconut fiber matrix with a longevity of 24 months.
   1. North American Green SC150
   2. Or accepted substitution

I. Biodegradable Slope Stabilization Mat (short term): 9.3 pound leno-woven biodegradable jute top net, 7.7 pound woven biodegradable jute bottom net, 100% straw fiber matrix with a longevity of 12 months.
   1. North American Green S150BN
   2. Or accepted substitution

J. Biodegradable Slope Stabilization Mat (extended term): 9.3 pound leno-woven biodegradable jute top net, 7.7 pound woven biodegradable jute bottom net, 70% straw/30% coconut fiber matrix with a longevity of 18 months.
   1. North American Green SC150BN
   2. Or accepted substitution

PART 3 EXECUTION

3.1 GENERAL

A. All temporary and permanent erosion and sediment control practices will be maintained and repaired as needed to ensure continued performance of their intended function.

B. Cass County will monitor Contractor's erosion control methods. If the overall function and intent of erosion control is not being met, Cass County will require Contractor to provide additional measures as required to obtain the desired results.

C. The erosion control features installed by Contractor shall be adequately maintained by Contractor until the project is accepted.

D. Working In or Crossing Watercourses and Wetlands:

1. Construction vehicles shall be kept out of watercourses to the extent possible.
2. Where in-channel work is necessary, precautions shall be taken to stabilize the work area during construction to minimize erosion.
    a. The channel, including bed and banks, shall always be restabilized immediately after in-channel work is completed.
3. Where a live (wet) watercourse must be crossed by construction vehicles during construction, a Temporary Stream Crossing shall be provided for this purpose.

3.2 PROTECTION OF ADJACENT PROPERITES

A. Properties adjacent to the site of a land disturbance shall be protected from sediment deposition.

B. In addition to the erosion control measures required on the drawings, perimeter controls may be required if damage to adjacent properties is likely, and may include, but is not limited to:
    1. Vegetated buffer strip around the lower perimeter of the land disturbance.
        a. Vegetated buffer strips may be used only where runoff in sheet flow is expected and should be at least twenty (20) feet in width.
    2. Sediment barriers such as straw bales, erosion logs, and silt fences.
    3. Sediment basins and porous landscape detention ponds.
    4. Combination of above measures.

3.3 CONSTRUCTION

A. Stabilization of Disturbed Areas:
    1. Temporary sediment control measures shall be established within five (5) days from time of exposure or disturbance.
    2. Permanent erosion protection measures shall be stablished within five (5) days after final grading of areas.

B. Stabilization of Sediment and Erosion Control Measures:
    1. Sediment barriers, perimeter dikes, and other measures intended to either trap sediment or prevent runoff from flowing over disturbed areas shall be constructed as a first step in grading and be made functional before land disturbance takes place.
    2. Earthen structures such as dams, dikes, and diversions shall be stabilized within five (5) days of installation.
    3. Stormwater outlets shall also be stabilized prior to any upstream land disturbing activities.

C. Stabilization of Waterways and Outlets:
    1. All onsite stormwater conveyance channels used by Contractor for temporary erosion control purposes shall be designed and constructed with adequate capacity and protection to prevent erosion during

storm and runoff events.

2. Stabilization adequate to prevent erosion shall also be provided at the outlets of all pipes and channels.

D. Storm Sewer Inlet Protection: All storm sewer inlets which are made operable during construction or which drain stormwater runoff from a construction site shall be protected from sediment deposition by the use of filters.

E. Construction Access Routes:

1. Wherever construction vehicles enter or leave a construction site, a Stabilized Construction Entrance is required.
2. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day.
3. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment controlled disposal area.
4. Street washing shall be allowed only after sediment is removed in the manner described above.

3.4 DISPOSITION OF TEMPORARY MEASURES

A. All temporary erosion and sediment control measures shall be disposed of within thirty (30) days after final site stabilization is achieved or after the temporary measures are no longer needed as determined by Cass County.

B. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.

C. Substantial Completion of Erosion Control Measures:

1. At the time specified in the Contract Documents, and subject to compliance with specified materials and installation requirements, Contractor shall receive a Substantial Completion Certificate for temporary erosion control measures.
2. Maintenance of Erosion Control Measures after Substantial Completion: Contractor shall be responsible for maintaining temporary erosion control measures as specified in the drawings and Contract Documents until such time as work has been accepted by Cass County and as specified in Division 1 for Closeout Procedures.

END OF SECTION

This page intentionally left blank.

SECTION 220533 - HEAT TRACING FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Self-regulating parallel resistance electric heating cable.

B. Cable outer jacket markings.

C. Connection kits.

D. Accessories.

E. Controls.

1.2 RELATED REQUIREMENTS

A. Section 220553 - Identification for Plumbing Piping and Equipment

B. Section 260526 - Grounding and Bonding for Electrical Systems.

1.3 REFERENCE STANDARDS

A. IEEE 515.1 - IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications; 2022.

B. ITS (DIR) - Directory of Listed Products; Current Edition.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. UL (DIR) - Online Certifications Directory; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

C. Coordinate the work with other trades to provide ground fault protection for electric heat tracing circuits as required by NFPA 70.

D. Coordinate the work with other trades to provide circuit breaker ratings suitable for installed circuit lengths.

1.5 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for electric heat tracing.

C. Shop Drawings: Indicate electric heat tracing layout, electrical terminations, thermostats, controls, and branch circuit connections.

D. Manufacturer's Installation Instructions: Indicate installation instructions and recommendations.

E. Field Quality Control Submittals: Indicate test reports and inspection reports.

F. Project Record Documents: Record actual locations of electric heat tracing lines and thermostats.

G. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions of equipment and controls, maintenance and repair data, and parts listings.

H. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.7 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Provide two year manufacturer warranty for cables, connection kits, accessories, and controls.

PART 2 PRODUCTS

2.1 SELF-REGULATING PARALLEL RESISTANCE ELECTRIC HEATING CABLE

A. Manufacturers:

1. Chromalox, Inc: www.chromalox.com/#sle.
2. Pentair: www.pentairthermal.com/#sle.
3. Thermon Manufacturing Company: www.thermon.com/#sle.

B. Refer to drawings AD 102 and A 102 for heat tracing cable replacement locations.

C. Provide products listed, classified, and labeled by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction (AHJ).

D. Factory Rating and Testing: Comply with IEEE 515.1.

E. Heating Element:

1. Provide pair of parallel No.16 tinned or nickel coated stranded copper bus wires embedded in cross linked conductive polymer core with varying heat output in response to temperature along its length.
2. Terminations: Waterproof, factory assembled, non-heating leads with connector at one end and water-tight seal at opposite end.
3. Capable of crossing over itself without overheating.

F. Insulated Jacket: Flame retardant polyolefin.

G. Cable Cover: Provide tinned copper and polyolefin outer jacket with UV inhibitor.

H. Maximum Power-On Operating Temperature: 150 degrees F.

I. Maximum Power-Off Exposure Temperature: 185 degrees F.

J. Electrical Characteristics:

1. 12 W/lineal ft.

2. 120 volts, single phase, 60 Hz.

2.2 CABLE OUTER JACKET MARKINGS

A. Name of manufacturer, trademark, or other recognized symbol of identification.

B. Catalog number, reference number, or model.

C. Month and year of manufacture, date coding, applicable serial number, or equivalent.

D. Agency listing or approval.

E. Applicable environmental or area use requirements, such as NEMA 4, Type 4, IP ratings, and hazardous (classified) location markings including temperature rating.

F. Any applicable warning/caution statements such as "WARNING: De-energize circuit before removing cover.

2.3 CONNECTION KITS

A. Provide power connection, splice/tee, and end seal kits compatible with the heating cable and without requiring cutting of the cable core to expose bus wires.

B. Provide with NEMA 4X rating for prevention of corrosion and water ingress.

C. Provide UV stabilized components.

2.4 ACCESSORIES

A. Provide Accessories As Indicated or As Required for Complete Installation, Including but Not Limited To:

1. High temperature, glass filament tape for attachment of heating cable to metal piping.

2. Aluminum self-adhesive tape for attachment of heating cable to plastic piping.

3. Heat-conductive putty.

4. Cable ties.

5. Silicone end seals and splice kits.

6. Installation clips.

7. Warning labels for attachment to exterior of piping insulation.

2.5 CONTROLS

A. Pipe Mounted Thermostats:

1. Remote bulb unit with adjustable temperature range from 30 to 50 degrees F.

2. Snap-action, open-on-rise, single pole switch with minimum current rating adequate for the connected cable.
3. Remote bulb on capillary, resistance temperature device (RTD) or thermistor for direct sensing of pipe wall temperature.
4. Control Enclosure: Corrosion resistant and waterproof.

B. Provide minimum 30 ampere contactor to indicate operational status and on/off control.

C. Line sensing high-limit temperature control and high-limit alarm.

D. Programmable Controller:

1. Micro-processor based.
2. On/Off/Auto switch.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that piping and equipment are ready to receive work.

B. Verify field measurements are as indicated on shop drawings.

C. Verify required power is available, in proper location, and ready for use.

3.2 PREPARATION

A. Clean exposed surfaces prior to installation.

B. Prepare surfaces using approved methods as recommended by manufacturer.

3.3 INSTALLATION

A. Install in accordance with manufacturer's written installation instructions.

B. Comply with installation requirements of IEEE 515.1 and NFPA 70, Article 427.

C. Apply heating cable linearly on pipe with fiberglass tape only after piping has successfully completed any required pressure testing.

D. Comply with applicable local building codes and requirements of authorities having jurisdiction.

E. Grounding: Refer to Section 260526.

F. Identification:

1. After thermal insulation installation, apply external pipeline decals to indicate presence of the thermal insulation cladding at intervals not to exceed 20 ft including cladding over each valve or other equipment that may require maintenance.

3.4 FIELD QUALITY CONTROL

A. Perform start-up by factory technician or factory representative as per Owner's requirements.

B. Field Testing and Inspections:

1. Commission system in accordance with installation and operation manual.
2. Inspect for sources of water entry and proper sealing.
3. Inspect weather barrier to confirm that no sharp edges are contacting the trace heating.
4. Insulation Resistance: Greater than 20 megohms at a test voltage of 2500 VDC for polymer insulated trace heaters.
5. Test heating cable integrity with megohmmeter at the following intervals:
    a. After cable has been installed onto the piping.
    b. After installing the connection kits.
    c. After the installation of thermal insulation onto the piping.
    d. Prior to initial start-up (commissioning).
6. Measure voltage and current at each unit.
7. Controls:
    a. Verify control parameters are set to the application requirements.
    b. Verify factory provided digital temperature controller is correctly configured with the building automation system.
8. Submit written test report showing values measured on each test for each cable.

3.5 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

This page intentionally left blank

SECTION 28 1300 - ACCESS CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Failure to consult these documents shall not relieve the Contractor of the requirements therein.

1.2 SUMMARY

A. This Section includes the following:

1. Security Access Devices.
2. Access Control Panel.

1.3 RELATED SECTIONS

A. Section 087100 –Door Hardware
B. Division 26 Section "Electrical" for connections to electrical power system and for low-voltage wiring work.
C. Division 27 Section "Communications" for connections to the LAN.

1.4 REFERENCES

A. ANSI A117.1 (1998) - Accessible and Usable Buildings and Facilities.
B. IBC 2009 - International Building Code.
C. NFPA 70 (2008) - National Electrical Code.
D. NFPA 80 - Fire Doors and Windows.
E. NFPA 101- Life Safety Code.
F. UL 294 - Access Control Systems.
G. UL 1076 - Proprietary Burglar Alarm Units and Systems.
H. Local applicable codes.

1.5 SYSTEM DESCRIPTION

A. Security Access System.

1. Selected Exterior Doors: Control access into Building.
2. Selected Building Areas: Control access into selected areas indicated.
3. System shall be compatible with existing Galaxy System, Software version 9.X or higher

1.6 SUBMITTALS

A. Shop Drawings: Provide system wiring diagram showing each device and wiring connection required.

B. Product Data: Provide electrical characteristics and connection requirements.

C. Test Reports: Indicate satisfactory completion of required tests and inspections.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

E. Project Record Documents: Record actual locations of access authorization equipment.

F. Operation Data: Operating instructions.

G. Maintenance Data: Maintenance and repair procedures.

1.7 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty years documented experience and with service facilities within 100 miles of Project.

C. Installer Qualifications: Company specializing in installing the products specified in this section with minimum Installer Qualifications: Systems Integrators, verifiably factory trained and certified by the primary product manufacturers, with documented experience installing complete integrated access control systems similar in material, design, and scope to that indicated for this Project and whose work has resulted in construction with a proven record of successful in-service performance. Qualifications include, but are not necessarily limited, to the following:

1. References: Provide a list of references for similar projects including contact name, phone number, name and type of project.
2. Professional Staffing: Firms to have a dedicated access control systems integration department with full time, experienced professionals on staff experienced in providing on site consulting services for both electrified door hardware and integrated access control systems installations.
3. Factory Training: Installation and service technicians are to be competent factory trained and certified personnel capable of maintaining the system.
4. Service Center: Firms to have a service center capable of providing training, in-stock parts, and emergency maintenance and repairs at the Project site with 24-hour/7-days a week maximum response time.

D. Supplier Qualifications: Supplier/Dealers, verifiably authorized and in good standing with the primary product manufacturers, with experience supplying integrated access control systems similar in material, design, and scope to that indicated for this Project and whose work has resulted in construction with a proven record of successful in-service performance.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article will not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and are in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of the installed access control system hardware and software that fails in materials or workmanship, including all related parts and labor, within specified warranty period after final testing and acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the National Burglar & Fire Alarm Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7**, and that is acceptable to Owner's insurance underwriter**.

E. Testing Agency's Field Supervisor: Person currently certified as an advanced alarm technician by the National Burglar & Fire Alarm Association to supervise on-site testing specified in Part 3.

1.9 MAINTENANCE SERVICE

A. Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (12) months full maintenance by skilled employees of the Systems Integrator. Include repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 OVERVIEW

A. The devices described herein are intended to provide a reference for the Card Access/Security System and are to be provided as described in the Contract Documents.

B. Certain devices described may not be applicable to all systems. All devices required to complete the installation may not be described but shall be provided as if specifically called for within the Specification. It is the responsibility of the Contractor to provide a complete working system.

C. All system components shall be approved for the function they will perform.

D. The system shall be of an open architecture design and shall support industry standard databases such as Microsoft SQL Server 2000/2005, MSDE or SQL Server 2005 Express.

E. A system server for enterprise wide database services, system programming, system monitoring, administrative services, report and proximity card generation.

F. A workstation computer shall provide interfacing and control of the local, site specific, Access/Security System.

G. The System shall be of a distributed database design, using intelligent microprocessor panels, to make smart decisions at the door.

H. The system shall be capable of utilizing a true client server network configured to support the system database service, all panel services and user interfaces optimizing the users' options for system programming, event monitoring and record keeping.

I. The database service shall be ODBC compliant allowing the system to access an existing compatible ODBC compliant database as the system data source. A single system database shall maintain both credential-holder's records as well as access system information and programming parameters.

2.2 MANUFACTURERS

A. Manufacturers subject to compliance with requirements, provide products by the manufacturers specified.

1. Access Control System- DMP Control Systems
2. Card Readers – HID or approved equivalent.
3. Proximity Cards – Cards will be furnished by Owner.
4. Substitutions: Refer to Division 01 Section "Product Requirements".

~~2.3 INSTALLING CONTRACTOR~~

~~A. Procure services from owner's existing maintenance agreement with existing system install company and utilize them for any additions or modifications to the existing system.~~

~~1. Koorsen Fire & Security~~
~~3953 Ralph Jones DR. STE B, South Bend, IN 46628~~
~~(574) 444-9887~~

2.4 ACCESS CONTROL PANEL

A. The access control panel shall be an intelligent, modular controller designed to integrate various event management applications on one controller. ~~The system shall be the System Galaxy 600 Series.~~

B. COMPONENTS

1. Primary Controller: The Primary Controller is the controller responsible for up/downstream communications with the PC/Network. The Primary Controller consists of three major subsystems, software services, hardware and expansion interfaces.

a. Software Services: The software services are a set of common functions and applications that shall be installed on every ~~600 Series~~ Controller to perform system configuration, generic system event handling and communications between the controller and a host or other controllers.

b. Hardware

1) Ethernet Port: The ~~600 Series~~ Controller shall support 10BaseT Ethernet Communication. The interface to the Ethernet services shall be through a standard RJ-45 jack connector native to the controller. Provide as many as required for full system integration.

2) Inputs/outputs: The ~~600 Series~~ controller shall have three (3) on-board inputs. The inputs are reserved for tamper, power fail, and low battery.

3) Serviceable Hot-Swap Modules: The Controller shall allow for "Hot-Swap" serviceability. This allows for communications and door modules to be interchanged without a controller power-down.

4) Power Requirements: Each ~~600 Series~~ Control Module shall accept a regulated input voltage of 11.5VDC to 13.8VDC and generate appropriate voltage levels for on-board use as required. The input supply voltage shall be available to be bussed directly to the reader bus connectors to supply operating voltages for field readers. A jumper shall be provided for the ACP modules supporting direct Wiegand support to supply either 12VDC or 5 VDC to the external read heads.

5) Indicators: There shall be LEDs indicating the status of the received and transmitted data for the onboard communications ports, with active data turning on the LED. These LEDs shall be hardware controlled.

6) Ports: There shall be multiple ports provided on-board for external read heads, input/output boards. The number of actual ports varies according to the controller configuration.

c. Expansion Interfaces

1) Inputs: 8 Supervised Class A inputs shall be provided on each Digital I/O board. These inputs shall report secure for user selectable ohms and alarm for open or short. Resistors marked for easy identification shall be located near each input connector to be clipped out by the end user when installing inputs.

Outputs: 4 Class C relay outputs shall be provided on each Digital I/O board these outputs shall have contacts for Normally Open or Normally Closed states

a) Each ~~600~~ Controller shall support up to five (5) Digital I/O board, adding up to forty (40) supervised inputs and twenty (20) Class C relays.

C. System Enclosure: Sheet metal, of the appropriate gauge for the cabinet size per UL 294, shall be utilized. The cabinet shall be Black in color with a matte finish. The ACP's shall be housed in a locking 18 gauge metal cabinet, suitable for wall mounting. All cabinet locks shall be keyed alike. The cabinet shall be suitably sized to allow installation of the controller and all expansion modules and associated field wiring. The cabinet door shall include illuminated diagnostic indicators, which shall indicate the status of the panel. A single tamper switch shall be incorporated into the door. There shall be at least 4 mounting holes and 10 knockouts on the cabinet. Panel shall be provided with 120 volt power supply along with battery backup and battery charger.

2.5 CARD READERS

A. All readers shall be compatible with Owners 26 bit, HID cards.

B. Readers shall be long range proximity, minimum 8" range, type technology system that complies with UL 294 standards and is certified as complying by Underwriters' Laboratories.

C. Readers shall be single piece indoor/outdoor wall switch proximity reader providing a Wiegand 26 Bit output. Shall mount in a door entry panel electrical box and shall be powered directly from the panel. The reader shall be sealed in a rugged, weatherized enclosure designed to withstand harsh environments as well as provide a high degree of vandal resistance when installed outdoors.

D. Manufacture

1. Wall mount – HID
2. Mullion Mount –HID
3. Vehicle Entrances – HID Maxiprox

E. POWER SUPPLIES

1. Power supplies for mortise and/or strike lock power shall be suitable to provide 24vdc, 4 amp power to Altronix AL-400. Provide one for every eight doors.

F. Key Pad Units.

G. Electric Strikes.

H. Electric Locks.

I. Motion Dectectors.

J. Manual Stations.

K. System Cable.

PART 3 - EXECUTION

3.1 PRE-INSTALL MEETING

A. Prior to commencing installation, the trades shall convene for a coordination meeting including but not limited to the following parties:

1. Architect
2. Electrical Engineer or Systems Designer
3. Construction Manager
4. Frame and Door Installer
5. Door Hardware Installer
6. Electrical and Fire Alarm contractor
7. Low voltage or security systems contractor

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use 16 AWG minimum size conductors for detection and signal circuit conductors. Install wiring in conduit.

C. Make conduit and wiring connections to door hardware devices furnished and installed under Division 08 Section "Door Hardware."

3.3 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Division 01 Section "Quality Control."

3.4 MANUFACTURER'S FIELD SERVICES

A. Include services of technician to supervise installation, adjustments, final connections, system testing, and to train Owner personnel.

3.5 DEMONSTRATION

A. Demonstrate normal and abnormal modes of operation, and required response to each.

B. Provide 4 hours of instruction each for two persons.

1. Conduct instruction at project site with manufacturer's representative.
2. Include travel and living expenses for Owner personnel.

SECTION 31 0000 - EARTHWORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Clearing, grubbing and site preparation
B. Removal and disposal of debris
C. Handling, storage, transportation, and disposal of excavated material
D. Sheeting, shoring, bracing and protection work
E. Pumping and dewatering as required or necessary
F. Backfilling
G. Pipe embedment
H. Construction of fills and embankments
I. Excavation for buildings & structures
J. Pavement Subgrade preparation
K. Trench Stabilization
L. Final grading
M. Slope Stabilization
N. Appurtenant work

1.3 RELATED SECTIONS

A. Section 00 3132 – Geotechnical Report
B. Section 01 5723 – Temporary Stormwater Pollution Controls
C. Section 32 1216 – Asphalt Paving
D. Section 32 1313 – Concrete Paving
E. Section 32 9200 – Turf and Grasses

1.4 REFERENCES

A. AASHTO – American Association of State Highway and Transportation Officials
B. ASTM – American Society for Testing and Materials
    1. C33 – Concrete Aggregates
    2. C136 – Sieve Analysis of Fine and Coarse Aggregates
    3. D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb.

Rammer and 12-Inch Drop

4. D1241 – Material for Soil Aggregate Subbase, Base and Surface Courses
5. D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
6. D4253 – Test Methods for Maximum Index Density of Soils and Unit Weight of Soils Using a Vibratory Table
7. D4254 – Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
8. D4318 – Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
9. D6938 – Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)

C. ACI – American Concrete Institute
   1. 229 – Controlled Low-Strength Materials
D. CABO/ANSI – Council of American Building Officials/American National Standards Institute
   1. A117.1 – Accessible and Useable Buildings and Facilities Standards
E. DOT – Department of Transportation
F. OSHA – Occupational Safety and Health Administration
   1. Part 1926 – Safety and Health Regulations for Construction

1.5 SUBMITTALS

A. Submit under provisions of Division One specifications.
B. Product Data: Submit on all products or materials supplied herein
C. Test Reports: Indicate supplier, sieve analysis, optimum moisture content and density in accordance with ASTM D698 if appropriate for crushed rock or gravel, pipe embedment and material for fills and embankment

1.6 REGULATORY REQUIREMENTS

A. Burning will not be allowed on-site. Comply with all applicable codes, regulations, and laws.
B. Comply with applicable requirements of CABO/ANSI A117.1 for accessibility requirements related to walks, ramps, parking areas, drives, curb ramps, etc.
C. Obtain and comply with all requirements of Cass County, respectively, and Michigan Stormwater and/or Groundwater Discharge Permits, as required.
D. For public improvements only, in the event of a conflict between municipal standards and this specification, municipal standards for products and installation will govern.
E. Excavation work will be performed in compliance with Cass County, respectively, and current OSHA requirements.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Protect adjacent structures and surrounding areas from damage during excavation, filling, and backfilling
B. Protect work from erosion or other similar types of damage until the project has been accepted. Leave protection in place for subsequent contractors' use.
C. Do not backfill or construct fills during freezing weather. Backfill or construct fills only when temperature is 35°F and rising
D. Do not use frozen materials, snow, or ice in any backfill or fill area
E. Do not backfill or construct fill on frozen surfaces
F. Protect excavated material from becoming frozen
G. Do not backfill or construct fills or embankments during periods of heavy rainfall or precipitation when soil moisture conditions will not allow proper compaction to be achieved
H. Do not remove trees from outside excavation or fill areas unless authorized by the Owner; protect from permanent damage by construction activities
I. Provide temporary bridges for roadways, walkways, driveways, etc.

1.8 QUALITY ASSURANCE

A. All imported material to be free of hazardous and organic wastes, "clean" as defined by EPA, and approved for its intended use by the Owner or project Geotechnical Engineer.

PART 2 PRODUCTS

2.1 MATERIALS

A. General - Soil materials, whether from sources on or off the site must be approved by the Geotechnical Engineer as suitable for intended use and specifically for required location or purpose.
B. Classification of Excavated Materials:
    1. No classification applies. Remove and handle all excavated materials regardless of its type, character, composition, condition, or depth. This includes all material that is not classified as rock excavation as described in Paragraph 2.1.B.2 Rock Excavation is included herein.
C. Fills and Embankments
    1. To the maximum extent practical use excess earth from onsite excavation for fills and embankments.
    2. Free from rocks or stones larger than 12 inch in greatest dimension and free from brush, stumps, logs, roots, debris, and organic and other deleterious materials
    3. Fill and embankment material must be acceptable to Engineer
    4. No rocks or stones larger than 6 inch in upper 18 inches of fill or embankment. Where allowed, distribute rocks and stones through the fill to not interfere with compaction.
D. Imported Fill for Fills and Embankments:

1. The Contractor is responsible for obtaining additional material for fills and embankments as necessary to meet the requirements shown on the Drawings.
2. Imported fill conforming to the following:
    a. Gradation (percent finer by weight ASTM C136): 3" – 100% passing, No. 4 Sieve – 50-100% passing, and No. 200 Sieve – 35% passing (maximum); or soil groups SP or SP-SM as approved by Geotechnical Engineer.
    b. Liquid Limit: 35 (maximum), Plasticity Index: 15 (maximum), Group Index: 10 (maximum)

E. Imported Fill for Fills, Subbase, and Pipe Bedding
1. The Contractor is responsible for obtaining additional material for fills and embankments as necessary to meet the requirements shown on the Drawings.
2. Imported fill, MDOT Class II / IIA sand, conforming to the following:
    a. Gradation (percent finer by weight MTM 108 & 109): 3" – 100% passing, 1" – 60-100% passing, No. 4 Sieve – 50-100% passing, and No. 200 Sieve – 0-7% passing

F. Aggregate Base Course
1. Imported fill, MDOT Class 21AA dense-graded aggregates

G. Topsoil
1. Topsoil is defined as fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of rocks, stumps, stones larger than 2 inches in any dimension, and other extraneous or toxic matter harmful to plant growth for areas to be seeded or planted. Coordinate testing requirements with Owner.
2. Clean topsoil free of plants and seeds will be spread to 4-inch minimum depth or as specified by Drawings, whichever is greater.

H. Grubbings
1. Grubbings are defined as the first 1 inch of surface vegetation and topsoil consisting of primarily existing grass groundcover free of roots, brush, and other objectionable material and debris.
2. Reuse grubbing and surface topsoil containing plants and seeds in designated revegetation areas only.

I. Pipe Embedment: Graded gravel
1. Comply with Cass County, respectively, requirements for pipe embedment for public utilities.

2. 1-1/2" Washed rock

Sieve Size (Inch)	Percent Passing by Weight
2"	100
1-1/2"	95-100
1"	80-95
3/4"	30-45
1/2"	10-25
3/8"	<1

3. 3/4" – 1" Crushed rock – AASHTO 57/67

Sieve Size (Inch)	Percent Passing by Weight
1	100
3/4"	90-100
1/2"	25-60
3/8"	20-55
NO. 4	0-10
NO. 8	0-5
NO. 200	0-2

4. Drain Gravel
   a. Crushed rock, granular material with a maximum size of 1-1/2 inch.
   b. Minimum 50% passing No. 4 sieve, maximum 5% retained on No. 200 sieve
5. Refer to Foundation or Underdrain specification for perforated pipe bedding requirements

J. Compacted Trench Backfill
1. Job excavated material finely divided, free of debris, organic material, and stones larger than 6 inches in greatest dimension without masses of moist, stiff clay, or topsoil
2. In upper 18 inches, no rock or rock excavated detritus, larger than 6 inches except with specific approval from Geotechnical Engineer.
3. No rock greater than 3 inches in greatest dimension within 3 feet of top of pipe
4. Graded gravel: as specified or shown on Drawings for pipe embedment

K. Coarse Base Rock
   1. Granular material, maximum 3 inches, less than 10% passing 1-inch sieve.
   2. Free of trash, clay and dust
   3. Compaction as specified by Geotechnical Engineer

2.2 ACCESSORIES

A. Controlled Low Strength Material (Flow Fill)
   1. Comply with Cass County, respectively, requirements and ACI 229 for the use of flowable fill within the right-of-way or for public utility trench backfill.
   2. Product will be a lean, sand-cement slurry, “flowable fill” or similar material with a 28-day unconfined compressive strength between 50 and 200 psi.

B. Non-woven geotextile fabric
   1. Needle-punched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Product must be inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Product must meet AASHTO M288-06 Class 3 for elongation > 50%.
      a. Mirafi 140N or accepted substitution

PART 3 EXECUTION

3.1 EXAMINATION

A. Field verify the location of all underground utilities, pipelines and structures prior to excavation

3.2 PERFORMANCE — GENERAL

A. Contractor to verify quantities of cuts and fills and perform all earthwork required to meet the grades as shown on the Drawings, including but not limited to, additional import or export required to handle compaction, building and pavement subgrade preparation, and pipe bedding.
B. Perform work in a safe and proper manner with appropriate precautions against hazard
C. Provide adequate working space and clearances for work performed within excavations and for installation and removal of utilities
D. Contain all construction activity on the designated site and within the limits of work. Cost of restoration offsite will be the responsibility of the Contractor
E. Maintain service to pipelines and utilities indicated on Drawings during construction

3.3 PREPARATION

A. Clearing and Grubbing
   1. Clear all site areas within the limits of work of grasses, roots, brush, and other objectionable material and debris.

2. Strip subgrade for fills and embankments of surface vegetation, sod, tree stumps and organic topsoil. Strip and stockpile all on-site material meeting the topsoil definition for all areas receiving grading where shown on Drawings
3. Remove all waste materials from site and dispose. Stockpile all acceptable grubbings for reuse in revegetation areas.
4. Remove and dispose of tree stumps and roots over 3 inches in diameter to a minimum depth of 18 inches below the natural surface or 5 feet below finished surface level, whichever is lower.
5. Remove debris including all demolished trees, underbrush, stumps, roots and other combustible materials from site and dispose of off-site; on-site burning is not permitted
6. Backfill all excavated depression include grub holes with approved material

B. Preservation of Trees
1. Do not remove trees outside fill or excavated areas, except as authorized by Engineer
2. Protect trees and their roots within the drip line that are to remain from permanent damage by construction operation
3. Trim standing trees in conflict with construction operations as directed by Owner or Engineer.

C. Topsoil Stripping
1. Strip onsite material meeting the topsoil definition to minimum depth of 4 inches from areas to receive grading as shown on Drawings.
2. Stockpile topsoil in areas designated by Owner and indicated on Drawings where it will not interfere with construction operations and activities and existing facilities
3. At the completion of work in each area, place and grade topsoil to maintain gradient as indicated and required. Roughen surface as required for erosion control.

D. Waste and Debris
1. Stockpile all acceptable grubbing for reuse in native revegetation areas
2. Remove and dispose of all waste materials and debris from clearing, grubbing, stripping and demolition off site

E. Stockpiles
1. Segregate materials suitable for the following:
   a. Topsoil
   b. Embankments and fills
   c. Backfill
   d. Spoils and waste only
2. No excavation will be deposited or stockpiled at any time so as to endanger stability of banks or

structures, health of trees and shrubs to be protected, or portions of the Work, either by direct pressure or indirectly by overloading banks contiguous to the operation

3. Stockpile soil materials away from edge of excavations
4. Do not obstruct or prevent access to roads, driveways, ditches, natural drainage channels, and utility control devices
5. If in result of adjacent structures, easement limitations, or other restrictions sufficient storage is not available within Project limits, Contractor will arrange for off-site areas for stockpiling and for moving material to and from the storage area at no additional cost to the Owner

3.4 PROTECTION OF EXISTING UTILITIES AND STRUCTURES

A. Excavation and backfill operations will be performed in such a manner to prevent cave-ins of excavations or the undermining, damage or disturbing of existing utilities and structures or of new work.

B. Backfill will be placed and compacted so as to prevent future settlement or damage to existing utilities and structures and new work

C. Any excavations improperly backfilled or where settlement occurs will be reopened to the depth required then refilled with approved materials and compacted, and the surface restored to the required grade and condition, at no additional costs to the Owner

D. Any damage due to excavation, backfilling, or settlement of the backfill, or injury to persons or damage to property occurring as a result of such damage will be the responsibility of the Contractor. All costs to repair such damage, in a manner satisfactory to the Engineer, will be borne by the Contractor at no additional expense to the Owner

3.5 DEWATERING

A. General

1. All dewatering activities in accordance with all federal, state, and local regulations regarding site drainage, dewatering, and erosion and sediment control including permitting requirements
2. Design and provide dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. Design system to prevent differential hydrostatic head, which would result in floating out soil particles in a manner, termed as a “quick” or “boiling” condition. System will not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation’s stability
3. Provide and maintain adequate dewatering equipment including power supply, if necessary, to remove and dispose of surface and groundwater entering excavations, trenches, and other parts of the Work
4. Provide dewatering system of sufficient size and capacity to prevent ground and surface water flow into

the excavation and to allow all Work to be installed in a dry condition

5. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods
6. Keep each excavation dry during subgrade preparation and continually thereafter until the structure to be built or the pipe to be installed is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result
7. Dewater excavations which extend to or below groundwater by lowering and keeping the groundwater level beneath such excavation at least 12 inches below the bottom of the excavation
8. Design, furnish, install, test, operate, monitor and maintain dewatering system of sufficient scope, size and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of groundwater and permit excavation and construction to proceed on dry, stable subgrades
9. Divert surface water or otherwise prevent it from entering excavated areas or trenches to the extent practical without damaging adjacent property
10. Maintain all drainage pipes, keep clean and free of sediment during construction and final cleanup
11. Open pumping with sumps and ditches will be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes
12. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head
13. Dewatering to surface waterways requires Michigan Department of Public Health and Environment dewatering permit. Contractor must obtain dewatering permit and comply with discharge requirements therein, including water treatment prior to discharge, if necessary

B. Design

1. Contractor will be responsible for the accuracy of the Drawings, design data, and operational records required
2. Contractor will be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system

C. Damages

1. Contractor will be responsible for and will repair without cost to the Owner any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation including, damage to the bottom due to heave and including but not limited to, removal and pumping out

of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system

2. Remove sub grade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner

D. Maintaining Excavation in Dewatered Condition

1. Dewatering will be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted
2. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance
3. Provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner
4. System maintenance will include supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavation in dewatered condition

E. System Removal

1. Remove dewatering equipment from the site, including related temporary electrical service
2. Wells will be removed or cut off a minimum of 3 feet below final ground surface, capped, and abandoned in accordance with regulations by agencies having jurisdiction

3.6 SHEETING, SHORING AND BRACING

A. All sheeting, shoring and bracing in accordance with OSHA and IBC requirements

B. Prevent undermining and damage to all structures, buildings, underground facilities, pavements and slabs

C. Contractor will responsible for obtaining all required permits or easements for encroachments into the public right-of-way and for coordinating any encroachments onto adjacent properties.

D. If sheet pile cut off walls are required, submit design calculations, stamped by a licensed Professional Engineer

E. Contractor will be solely responsible for proper design, installation, operation, maintenance, and any failure of any system component

1. Engineer review of Contractor's design and data does not relieve the Contractor from full responsibility

for errors or from the entire responsibility for complete and adequate design and performance of the sheeting, shoring and bracing system

F. Provide proper and substantial sheeting, shoring, and bracing, in accordance with OSHA Standards as required, to prevent caving or sliding, to protect workmen and the Work, and to protect existing structures and facilities

G. Design, furnish, build, maintain and subsequently remove, to extent required a system of temporary supports for cut and cover, open cut, temporary bypass road, or trench excavations, including bracing, dewatering, and all associated items to support the sides and ends of excavations where excavation slopes may endanger in-place or proposed improvements, extend beyond construction right-of-ways or as otherwise specified or indicated in the Drawings

1. Design and build sheeting, shoring, and bracing to withstand all loads that might be caused by earth movement or pressure
2. Design and build sheeting, shoring and bracing to be rigid, maintain shape and position under all circumstances.

H. Design excavation support system and components for the following to allow safe and expeditious construction of permanent structures without movement/settlement of the ground and to prevent damage to or movement of adjacent buildings, structures, other improvements and underground facilities

1. To support lateral earth pressures
2. Loads from utilities, traffic, construction, buildings and surcharge loads

I. Provide sheeting, shoring and bracing equipment and materials onsite prior to start of excavation in each section, making adjustments as required to meet unexpected conditions

J. Contractor will make his own assessment of existing conditions including adjacent property, the possible effects of his proposed temporary works and construction methods, and will select and design support systems, methods, and details as will assure safety to the public, adjacent property, and the completed Work.

K. Employ caution in areas of underground facilities, which will be exposed by hand or other excavation methods acceptable to Owner or Engineer.

L. Space and arrange sheeting and bracing as required to exclude adjacent material and according to the stability of excavation slopes

M. Do not pull trench sheeting before backfilling

N. Do not brace sheeting left in place against the pipe, but support it in a manner that precludes concentrated loads or horizontal thrusts on pipe

O. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment is

completed

P. Damages
   1. Contractor will document and all existing damage to adjacent facilities and submit written documentation to Owner and Engineer prior to performing any excavation. Documentation will include written description of existing damages, measurements, diagrams, maps and associated photographs
   2. Repair all damage resulting from excavation and remove and place any existing structure or underground facility damaged during shoring and sheeting and all undermined pavements with Owner-approved equal, concrete or asphalt, at no cost to the Owner.

3.7 TRENCH STABILIZATION

A. Thoroughly compact and consolidate subgrades for concrete structures, precast structures, and utility trench bottoms so they remain firm, dense and intact during required construction activities
B. Remove all mud and muck during excavation
C. Reinforce subgrades with crushed rock or gravel if they become mucky during construction activities
D. Finished elevation of stabilized subgrades are to be at or below subgrade elevations indicated on Drawings
E. Allow no more than ½ inch depth of mud or muck to remain on trench bottoms when pipe bedding material is placed thereon
F. Scarify trench subgrade to a depth of 6 to 8 inches before compaction

3.8 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot
B. Remove existing unsuitable/uncompacted fill, old foundations, rubble/debris, soft or otherwise unsuitable material, and replace with suitable material in excavation
C. Extend excavations to a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction and inspections
D. Trim to neat lines where details call for concrete to be deposited against earth
E. Excavate by hand in areas where space and access will not permit use of machines
F. Provide dewatering and temporary drainage as required to keep excavations dry.
G. Reshape subgrade and wet as required
H. Notify Geotechnical Engineer when structure excavation has reached designated depth. Do not proceed with structure construction until excavation is approved by Geotechnical Engineer.

3.9 PAVEMENT OVEREXCAVATION AND SUBGRADE PREPARATION

A. Excavate subgrade for asphalt pavement areas per the lines, grades, and dimensions indicated on Drawings within a tolerance of plus or minus 0.10 foot. Excavate subgrade for concrete pavement areas per the lines, grades, and dimensions indicated on Drawings within a tolerance of plus or minus 0.05 foot.

B. Overexcavate and scarify existing soil as required under pavement areas, slabs, curbs and walks to meet the moisture and compaction specifications herein to depth shown on Drawings.

C. Extend subgrade preparation a minimum of one foot beyond back of proposed pavement, slabs, curbs and walks.

D. Extend subgrade preparation a minimum of two feet beyond back of proposed structure foundation limit.

E. Proof roll with a pneumatic tire equipment with a minimum axle load of 18 kips per axle a maximum of 24 hours prior to paving to locate any soft spots that exhibit instability and deflection beyond subgrade tolerances listed above. Areas that are observed to have soft spots in the subgrade, where deflection is not uniform or is excessive as determined by the Geotechnical Engineer, will be ripped, scarified, dried or wetted as necessary and recompacted to the requirements for density and moisture at the Contractor's expense. After recompaction, these areas will be proof rolled again and all failures again corrected at the Contractor's expense.

F. If the Contractor fails to place the sub base, base course, or initial pavement course within 24 hours or the condition of the subgrade changes due to weather or other conditions, proof rolling and correction will be performed again at the Contractor's expense.

3.10 FILLS AND EMBANKMENTS

A. Using suitable approved materials, shape, trim, and finish cut slopes to conform with contours and elevations indicated on Drawings

B. Suitable materials will consist of excavations or borrow areas

1. Borrow
    a. Borrow areas will be arranged by Contractor at no additional cost to Owner and will be subject to approval by Geotechnical Engineer
    b. Includes all topsoils and fill materials from approved offsite locations

C. Place in layers from 4 to 8 inches where high degree of compaction is required. Otherwise, place in 8 to 9 inch layers. Will be placed on subgrades approved by Geotechnical Engineer

D. Will not be placed on frozen surface. Do not place snow, ice or frozen materials in fill

E. Level and roll subgrade so surface materials will be compact and bond with the first layer of fill or embankment

1. Plow and scarify subgrade to a minimum depth of 6 inches until uniform and free of large clods

F. Place in horizontal layers at maximum uncompacted depth per compaction specifications herein.

G. Spread and level material deposited in piles and windrows before compacting

H. Thoroughly compact each layer by rolling or other means acceptable to Geotechnical Engineer to meet the moisture and compaction specifications herein.

I. Alter compaction methods if material fails to meet specified density

J. Where a trench passes through a fill or embankment, place and compact fill or embankment to 12 inch above the top of the pipe before excavating the trench

K. Add water and harrow, disc, blade, or otherwise work each layer to obtain the uniform moisture content and adequate compaction

L. Refer to geotechnical report for additional requirements for fill and embankment preparation requirements.

3.11 COMPACTION

A. Place backfill and fill materials in layers not more than 9 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure as described herein.

C. Refer to geotechnical report for additional requirements for site development material, subexcavation, compaction and related earthwork operations.

D. Percentage of Maximum Dry Density Requirements: Moisture treat and compact soil to not less than the following percentages of maximum dry density and to within the specified moisture content range of optimum moisture content according to ASTM D698 as follows:

Surface Improvement	Compaction %	Moisture Content
Structures	98%	-2 to +2
Paved Areas	95%	-2 to +2
Utility Trenches	95%	-2 to +2
Lawns or Unpaved Areas	90%	-2 to +2
Public Right-of-way	Per municipal standards	

1. Do not deposit or compact tamped or otherwise mechanically compacted backfill if frozen or if in water.
2. Take particular care to compact backfill which will be beneath slabs, pipes, drives, roads, parking areas, curb, gutters, or other surface construction.

3.12 BORROW OR SPOIL AREA

A. Obtain suitable material required to complete fill and embankments from excavation, on-site areas.

B. The location, size, shape, depth, drainage, and surfacing of borrow or spoil pits will be acceptable to Owner.

C. Make all areas regular in shape with graded and surfaced side and bottom slopes when completed

D. Cut side slopes not steeper than 1:1 and uniform for the entire length of any one side

E. Final grade disturbed areas of borrow to uniform slope (maximum slope = 4:1, minimum slope = 50:1).

F. Use material free of debris and deleterious material

3.13 DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. Use excess excavated materials in fills and embankments as indicated on the Drawings to the extent needed. Coordinate with Owner and Engineer on locations for excess material placement.

B. The Contractor is responsible for disposing of all excess excavated materials from the site to a location approved by the Owner or Engineer and permitted with the local authorities.

C. Remove debris, junk, broken concrete, broken asphalt, rock, stones, stumps, logs, roots, and other unsuitable material from the site and dispose of it.

3.14 BLASTING

A. Blasting or other use of explosives is not permitted without Cass County, respectively, approval

3.15 TRENCH EXCAVATION

A. Establish alignment and grade or elevation from offset stakes provided by the Contractor's surveyor.

B. Excavate trenches so pipes can be laid straight at uniform grade without dips or bumps, between the terminal elevations indicated on the Drawings

C. Comply with pipe specification sections regarding vertical and horizontal alignment and maximum joint deflection

D. Where grades or elevations are not fixed on the Drawings, excavate trenches to provide a minimum depth of backfill cover over the top of pipe as follows. Coordinate depth of cover with utility owners. Increase depth as required by utility owner and at crossings. Minimum depths are:

1. 2.0 feet for drainage piping
2. 2.5 feet for gas piping
3. 2.5 feet for electric, telecom, and fiber optic conduit
4. 2.0 feet for irrigation piping
5. 3.0 feet for sanitary sewer
6. 4.5 feet for water piping
7. Increase depth as required at vertical curves and for clearance beneath existing pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades

E. Measure pipe cover depth vertically from top of pipe to finished ground or surface elevation

F. Do not open more trench in advance of pipe laying than is necessary to expedite the work; not more than 200 feet

G. Total length of open trench will be limited to 200 feet unless otherwise approved by the Engineer

H. Except where tunneling or boring is indicated on the Drawings, specified, required by jurisdictional agency or

permitted by Engineer, excavate trenches by open cut from the surface

I. Limiting trench widths
   1. Excavate to a width which will provide adequate working space and pipe clearances for proper pipe installation, jointing, embedment
   2. If needed to reduce earth loads to prevent sliding, cut banks back on slopes which extend not lower than 1 foot above the top of the pipe
   3. Stipulated minimum clearances are minimum clear distances, not minimum average distances
   4. Maximum trench width from six inches above the top of pipe to trench bottom is the pipe outside diameter plus 24 inches
   5. Limiting trench widths and permissible clearances from 6 inches above top of pipe to trench bottom for installed pressure and non-pressure piping

Pipe Size (inch)	Minimum Trench Width	Maximum Trench Width
3	1’ 6”	2’ 6”
4	1’ 6”	2’ 6”
6	1’ 6”	2’ 6”
8	1’ 8”	2” 8”
10	2’ 0”	3’ 0”
12	2’ 0”	3’ 0”
16	2’ 8”	3’ 8”
18	3’ 0”	4’ 0”
24	3’ 6”	4’ 6”
36	4’ 6”	5’ 0”

   6. If the width of the lower portion of the trench exceeds the maximum permitted, provide special pipe embedment, or concrete encasement as required by loading conditions
   7. No excessive trench widths will be allowed to avoid the use of sheeting or shoring and bracing

J. Trench Side Walls
   1. Will be sloped, shored, sheeted, braced, or otherwise supported by means of sufficient strength to protect workmen in accordance with applicable rules and regulations established for construction by the federal, state, and local ordinances and regulations
   2. Sheet and brace where necessary and as specified herein
   3. Excavate without undercutting

K. Trench Bottom
   1. Will be thoroughly protected and maintained when suitable natural materials are encountered
   2. Will be thoroughly compacted and in approved condition prior to placing gravel bedding, if required

3. Where in earth, trench bottoms for 6 inches and smaller pipe may be excavated below pipe subgrade and granular embedment provided or the trench may be graded to provide uniform and continuous support between bell holes or end joints of the installed pipe at the Contractor's option
4. Whenever so directed by Engineer, excavate to such depth below grade as Engineer directs and bring the trench bottom to grade with such material approved by Engineer
5. Do not allow any part of bells or couplings to contact the trench bottom, walls, or granular embedment when pipe is joined
6. PVC pipe will not be laid directly on trench bottom

L. Mechanical excavation
1. Do not use where its operation would damage buildings, culverts, or other existing property, structures, or utilities above or below ground; hand excavate only in such areas
2. Use mechanical equipment of a type and design which can be operated to provide the following:
   a. Rough trench bottom to a controlled elevation
   b. Uniform trench widths and vertical sidewalls are obtained from 1 foot above the top of the installed pipe to the bottom of the trench
   c. Trench alignment is such that pipe is accurately laid to specified alignment and is centered in the trench with adequate clearance between pipe and trench sidewalls
3. Do not undercut trench sidewalls
4. Recompact trench bottom disturbed by bucket teeth prior to placement of embedment material

M. Except as otherwise required, excavate trenches below the underside of pipes as indicated in the Drawings to provide for installation of granular embedment pipe foundation material

N. Whenever so directed by Engineer, excavate to such depth below grade as Engineer directs and bring the trench bottom to grade with such material as Engineer may direct

O. For unstable soils, provide concrete or other bedding as directed by Engineer

P. Do not allow any part of bells or couplings to contact the trench bottom, walls, or granular embedment when pipe is joined

Q. Cuts in existing surface construction
1. No larger than necessary to provide adequate working space
2. Cut a clean groove not less than 1½ inch deep along each side of trench or around perimeter of excavation area
3. Remove pavement and base pavement to provide shoulder not less than 6 feet wide between cut edge and top edge of trench
4. Do not undercut trenches, resulting in bottom trench width greater than top widths

5. Make pavement cuts to and between straight or accurately marked curved lines parallel to trench centerline or limits of excavation
6. Remove pavement for connections to existing lines or structures only to the extent required for the installation
7. Replace the pavements between saw cuts to match original surface construction

3.16 PIPE EMBEDMENT

A. Embed pipes above and below the bottom of pipe as indicated on the Drawings and as specified herein

B. Granular embedment

1. Spread and surface grade granular embedment to provide continuous and uniform support beneath pipe at all points between pipe joints.
    a. Level bottom layer at proper grade to receive and uniformly support pipe barrel throughout length
    b. Barrel of pipe will have a bearing for its full length
2. Form depressions under each joint to permit the proper jointing. No part of joint will be in contact with trench when pipe is placed in position
3. After grading, aligning, and placing pipe in final position, and shoring home, deposit and compact sufficient embedment under and around each side of the pipe to hold the pipe in proper position and alignment during subsequent operations
4. Place and compact embedment material uniformly and simultaneously on both sides of pipe to prevent displacement
5. Complete embedment promptly after jointing operations and approval to proceed by Engineer
6. Granular embedment compaction by slicing with shovel or vibrating
    a. Maximum uncompacted thickness of layers: 6 inch
7. Compacted embedment will be compacted to 90 percent maximum density per ASTM D1557
    a. Maximum uncompacted depth thickness of horizontal layers: 8 inch

C. Arch and concrete encasement

1. Include in locations indicated on Drawings or where over-width trench conditions need correction as approved by Engineer
2. Install and form as indicated on Drawings or as specified
3. Concrete will have a 28-day minimum 3,000 psi compressive strength

D. Do not backfill until tests and inspections have been made and backfilling is authorized by Engineer. Use care in backfilling to avoid damage or displacement of pipe systems

3.17 TRENCH BACKFILL

A. Backfilling will be conducted in a continuous manner to prevent damage to the pipe and its coating and kept

as close to the pipe laying operation as possible. Backfilling procedures will be in accordance with additional requirements, if any, of local authorities or private right-of-way agreements.

B. Compacted backfill
   1. Provide full depth of trench above embedment at all locations
   2. Beneath pavements, surfacing, driveways, curbs, gutters, walks or other surface construction or structures
   3. In street or highway shoulders
   4. Beneath fills and embankments

C. Where the trench for one pipe passes beneath the trench of another pipe, compact the backfill for the lower trench to the bottom of the upper trench

D. Site excavated materials
   1. Place job excavated materials in 9 inches maximum uncompacted thickness, uniform layers
   2. Increased layer thickness may be permitted for incohesive material if Contractor demonstrates to Engineer's satisfaction that specified compacted density will be achieved
   3. Use methods and equipment appropriate to the material to be compacted to prevent transmission of damaging shocks to pipe
   4. Thoroughly compact each layer to meet the moisture and compaction specifications herein.

E. Graded gravel
   1. Deposit in uniform layers of 9 inches maximum uncompacted thickness
   2. Compact with suitable vibrating roller or platform vibrator to not less than 70 percent relative density per ASTM D4253/D4254

F. Uncompacted backfill
   1. Compaction of backfill above pipe embedment in locations other than those specified, is required only to prevent future settlement
   2. May be placed by any method acceptable to Engineer which will not impose excessive concentrated or unbalanced loads, shock, or impact on, and will not result in displacement of installed pipe
   3. Until compacted depth over conduit exceeds 3 feet, do not drop fill material over 5 feet. Distance may be increased 2 feet for each additional 1 foot of cover

G. Finish the top portion of backfill with at least 4 inches of topsoil or as specified by landscaping specifications, whichever is greater, corresponding to, or better than, that underlying adjoining turf areas.

H. Trench backfill within the public right-of-way will conform to municipal street and utility standards.

I. Trench backfills through unimproved areas should be restored to previous conditions and left 3” above adjacent grades to allow for settlement. Seed all disturbed areas according to erosion control and landscape

specifications.

J. Protection of trench backfill
   1. Where trenches are constructed in ditches or other water courses, protect backfill from erosion
   2. Install ditch checks where the ditch grade exceeds 1 percent
      a. Minimum depth: 2 feet below the original ditch or water course bottom for the full bottom width
      b. Minimum width: 18 inches into the side slopes
      c. Minimum thickness: 12 inches

3.18 DRAINAGE MAINTENANCE

A. Do not backfill trenches across roadways, drives, walks or other trafficways adjacent to drainage ditches or water courses prior to backfilling the trench on the upstream side of the trafficway to prevent impounding water after pipe is laid
B. Backfill so that water does not accumulate in unfilled or partially filled trenches
C. Remove materials deposited in roadway ditches or other water courses crossed by the trench line immediately after backfilling is completed and restore ditches and water courses to original section, grade, and contours
D. Do not obstruct surface drainage any longer than necessary
E. Provide and maintain temporary bridges and other structures across unfilled trenches as required to maintain traffic
F. Provide adequate storm flow conveyance through the site at all times during construction to avoid flooding of any buildings or adjacent property. Provide overland drainage routing when storm sewer inlets are not fully functioning due to erosion and sediment control measures.

3.19 FINAL GRADING

A. After completion of all other outside work and after backfilling is completed and settled, bring to grade at the indicated elevations, slopes and contours, all areas being graded on site
B. Graders and other power equipment may be used for final grading and slope dressing if the result is uniform and equivalent to hand work
C. Grade all surfaces for effective drainage, provide a 2 percent minimum slope except as otherwise shown on the Drawings
D. Provide a smooth transition between adjacent existing grades and new grades
E. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances
F. Slope grades to direct water away from buildings and prevent ponds from forming where not intended
G. Finish subgrades at lawns and unpaved areas to required elevations within a tolerance of plus or minus one (1) inch

H. Finish grades will be no more than 0.1 foot above or below those indicated

I. Finish all ditches, swales and gutters to drain readily

J. Coordinate final subgrade depth with finish landscape treatment and required topsoil depths

K. Topsoil

1. Clean topsoil, free of plants and seed will be spread to 4-inch minimum depth, for all disturbed areas of the site.
2. Reuse grubbings and surface topsoil containing plants and seeds in designated revegetation areas only.

3.20 SLOPE AND CHANNEL STABILIZATION

A. Cover channel banks, slopes, bottom and thalweg (water flowline at lowest point in channel) with erosion control fabric mat where grade is steeper than 4H to 1V and where indicated on the Drawings

B. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 6-inch overlap minimum of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil

C. Secure outside edges and overlaps at 48 inch intervals with 4-inch to 6-inch U-shaped type pins or wooden stakes depending on ground condition

D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil

E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches

F. Maintain integrity of erosion control fabric

G. Prior to laying fabric, seed disturbed areas under provisions of related seeding and as specified on Drawings.

3.21 SETTLEMENT

A. Warranty for settlement of all fills, embankments, and backfills is stipulated in the General Conditions from final completion of Contract under which Work is performed

B. Repair or replace within 30 days after notice by Engineer or Owner

3.22 FIELD QUALITY CONTROL

A. Provide under provisions of General Conditions and Division One Specifications

B. Coordinate testing with Owner. Owner will provide all field testing to determine compliance of in-place and backfill materials and compaction in accordance with the specifications, and to verify design bearing capacities.

C. It is the Contractor's responsibility to initiate, coordinate and accommodate all required tests and inspections including conformance with requirements of all applicable public agencies and authorities. Contractor will be responsible for coordinating the testing requirement with testing agency and provide the testing agency contractually required, 48 hour, two business day advance notification to schedule tests.

D. Fills and Embankment Testing

1. Two moisture-density relationship tests, ASTM D698, on each type of fill material

2. One in-place compaction test for each 5,000 square feet every 1.5 feet of vertical lift of material placed
3. Additional in-place compaction tests at the discretion of the Owner

E. Pipe Embedment and Backfill Testing
1. Two moisture-density relationship tests, ASTM D698, or two relative density tests, ASTM D4253/D4254, as appropriate for each type of embedment on backfill material proposed, except granular embedment material
2. One in-place compaction test every 200 lineal feet of trench in the compacted embedment zone and at every 1.5 feet of vertical lift of backfill materials, per ASTM D6938
3. One in-place compaction test near top of trench for trench depth of 2 feet or less, per ASTM D6938
4. Additional in-place compaction tests at the discretion of the Owner

F. Pavement and Structural Subgrade Testing
1. At a minimum, two moisture-density relationship tests, ASTM D698, or two relative density tests, ASTM D4253/D4254, as appropriate and adequate for each type backfill material proposed.
2. Perform tests for each footing, concrete site feature, and drainage structure subgrade. Perform tests at every 100 linear feet of subgrade of foundation walls, retaining walls, and every 150 feet for curbing, pans, drainage features, walks, etc. (or portions thereof). Perform tests every 2,000 square feet required of building slab area, exterior slabs and pavement/flatwork areas (with no less than 3 tests). Test at subgrade and at every vertical lift of backfill materials placed.
3. Additional in-place compaction tests at the discretion of the Owner

G. Inspection and approval
1. A qualified Geotechnical Engineer will inspect the natural soil at bottom of excavations for structures
2. Do not prepare subgrade or place concrete until Geotechnical Engineer's inspection has taken place and any resulting recommendations of the Geotechnical Engineer have been fulfilled or until the inspection has been waived by the Geotechnical Engineer
3. Prior to placement of structural fill, overexcavated foundations subgrades will be observed and tested by a qualified Geotechnical Engineer to ensure suitable bearing materials exist
4. Geotechnical Engineer will provide a letter to Engineer to confirm the presence of suitable subgrade material and properly placed fill materials by Contractor in accordance with Drawings and geotechnical report.

H. Retesting of failed compaction will be performed by Geotechnical Engineer for Owner, but paid for the Contractor

END OF SECTION

SECTION 32 1300 - CEMENT CONCRETE PAVEMENT

PART 1 -
PART 1 - GENERAL

1.1
SCHEDULE 1 - RELATED DOCUMENTS

A.

PRODUCT DATA SHEET 1 - Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SCHEDULE 2 - SUMMARY

This Section includes exterior cement concrete pavement for the following:

1.1 Walkways.

Related Sections include the following:

1.2 Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.

SCHEDULE 3 - DEFINITIONS

PRODUCT DATA SHEET 0 - Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

SCHEDULE 4 - SUBMITTALS

PRODUCT DATA SHEET 0 - Product Data: For each type of manufactured material and product indicated.

PRODUCT DATA SHEET 1 - Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

1.1 Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1.2 Cementitious materials.

1.3 Steel reinforcement and reinforcement accessories.

1.4 Fiber reinforcement.

1.5 Admixtures.

1.6 Curing compounds.

1.7 Applied finish materials.

1.8 Bonding agent or epoxy adhesive.

1.9 Joint fillers.

PRODUCT DATA SHEET 2 - Field quality-control test reports.

PRODUCT DATA SHEET 3 - Minutes of preinstallation conference.

SCHEDULE 5 - QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has successfully completed concrete Work similar in material, design, and extent to that indicated for this Project.

Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to National Ready Mixed Concrete Association's "Certification of Ready Mixed Concrete Production Facilities.

Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

2. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

C. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

D. Michigan Department of Transportation: Conform materials and installations to applicable portions of Michigan Department of Transportation (MDOT), and Mendon construction specifications, standards, and details.

A. Concrete Testing Agency: Testing services shall be arranged and paid for as indicated in Division1 General Requirements. A qualified independent testing and inspecting agency shall sample materials, perform material evaluation tests, and submit test reports.

1.6 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves with a radius 100 feet or less.

B.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

C. Epoxy-Coated Welded Wire Fabric: ASTM A 884/A 884M, Class A, plain steel.

D. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

E. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A 615/A 615M, Grade 60 deformed bars.

F. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M or ASTM A 934/A 934M; with ASTM A 615/A 615M, Grade 60) deformed bars.

G. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.

H. Plain Steel Wire: ASTM A 82

I. Deformed-Steel Wire: ASTM A 496.

J. Epoxy-Coated-Steel Wire: ASTM A 884/A 884M, Class A coated

K. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

L. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60, plain steel bars.

M. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.

N. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

C.

O. Epoxy Repair Coating: Liquid two-part epoxy repair coating, compatible with epoxy coating on reinforcement.

P. Zinc Repair Material: ASTM A 780.

2.3 CONCRETE MATERIALS

Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:

Portland Cement: ASTM C 150, Type I. Supplement with the following:

a. a. Fly Ash: ASTM C 618, Class C or F
b. b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

Normal-Weight Aggregates: ASTM C 33, coarse aggregate, uniformly graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar pavement applications and service conditions using similar aggregates and cementitious materials.

1. 1/3 the depth of slabs, nor
2. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:

4. Aggregate Sizes: 3/4 to 1 inch nominal.

B. Water: ASTM C 94/C 94M.

C. Air-Entraining Admixture: ASTM C 260.

Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.4 FIBER REINFORCEMENT

Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.

1. Available Products:
   a. Monofilament Fibers:
      1) Fibermix Stealth; Fibermesh, Div. of Synthetic Industries.
      2) Grace, W. R. & Co.--Conn.; Grace MicroFiber.
   b. Fibrillated Fibers:
      1) Fibermix Stealth; Fibermesh, Div. of Synthetic Industries.
      2) Grace, W. R. & Co.--Conn.; Grace Fibers.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. Eucobar; Euclid Chemical Co.
   b. Confilm; Master Builders, Inc.
   c. SikaFilm; Sika Corporation.

Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2. 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. a. Aqua Cure VOX; Euclid Chemical Co.
   b. b. Vocomp-20; W. R. Meadows, Inc.
   c. c.Kure-N-Seal WB; Sonneborn, Div. of ChemRex, Inc.

White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

2. Available Products:

a. Anti-Hydro International, Inc.; AH Curing Compound #2 WP WB.
b. Burke by Edoco; Resin Emulsion White.
c. ChemMasters; Safe-Cure 2000.
d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
e. Dayton Superior Corporation; Day-Chem White Pigmented Cure (J-10-W).
f. Euclid Chemical Company (The); Kurez VOX White Pigmented.
g. Kaufman Products, Inc.; Thinfilm 450.
h. Lambert Corporation; Aqua Kure-White.
i. L&M Construction Chemicals, Inc.; L&M Cure R-2.
j. Meadows, W. R., Inc.; 1200-White.
k. Symons Corporation; Resi-Chem White.
l. Tamms Industries, Inc.; Horncure 200-W.
m. Unitex; Hydro White.
n. Vexcon Chemicals, Inc.; Certi-Vex Enviocure White 100.

2.6 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersal, acrylic emulsion or styrene butadiene.

Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements, and as follows:

1. Types I and II, non-load bearing for bonding hardened or freshly mixed concrete to hardened concrete.

Chemical Surface Retarder: Water-soluble, liquid-set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch.

2. Available Products:
a. Burke by Edeco; True Etch Surface Retarder.
b. ChemMasters; Exposee.
c. Conspec Marketing & Manufacturing Co., Inc.; Delay S.
d. Euclid Chemical Company (The); Surface Retarder S.

e. Kaufman Products, Inc.; Expose.

f. Metalcrete Industries; Surftard.

g. Nox-Crete Products Group, Kinsman Corporation; Crete-Nox TA.

h. Scofield, L. M. Company; Lithotex.

i. Sika Corporation, Inc.; Rugasol-S.

j. Vexcon Chemicals, Inc.; Certi-Vex Envioset.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

Proportion mixtures to provide normal-weight concrete with the following properties:

2. Compressive Strength (28 Days): 4500 psi
3. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
4. Slump Limit: 4 inches.

Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

5. Air Content: 6 percent plus or minus 1.5 percent for 1-inch nominal maximum aggregate size.

B. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture or high-range, water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.

3. Fly Ash or Pozzolan: 25 percent.
4. Ground Granulated Blast-Furnace Slag: 50 percent.
5. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

C. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less

than 1.0-1.5 lb/cu. yd.

D.

D. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete mixes of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete mixes larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without

damage.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Zinc-Coated Reinforcement: Use galvanized steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

G. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
2. Provide tie bars at sides of pavement strips where indicated.
3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.

5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

E.

Expansion Joints: Form expansion joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

6. Locate expansion joints at intervals of 30 feet maximum, unless otherwise indicated.
7. Extend joint fillers full width and depth of joint.
8. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
9. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
10. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
11. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated with a maximum interval of 10 feet. Construct contraction joints for a depth equal to at least one-third of the concrete thickness, as follows to match jointing of existing adjacent concrete pavement:

12. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
13. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
14. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

C. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not

place concrete on frozen surfaces.

F.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site.

F. Do not add water to fresh concrete after testing.

G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

I. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.

1. Remove and replace concrete that has been placed for more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.

J. Screed pavement surfaces with a straightedge and strike off.

K. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

L. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

M. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.

G.

N. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.

O. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

P. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.

b. Continuous water-fog spray.

c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 PAVEMENT TOLERANCES

Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.

10. Joint Width: Plus 1/8 inch, no minus.

3.10 PAVEMENT MARKING

H.

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

1. Spread glass beads uniformly into wet pavement markings at a rate of 6 lb/gal..

3.11 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

Testing Frequency: Obtain at least 1 composite sample for each 5000 sq. ft. or fraction thereof of each concrete mix placed each day.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.

4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
    a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

B. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi

C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

E. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

F. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.13 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 33 4200 - STORMWATER CONVEYANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Piping and concrete structures for storm sewer system, roof drainage, and culverts

B. Riprap for channel lining, outlet protection and rock check dams

1.2 RELATED SECTIONS

A. Section 31 0000 – Earthwork

1.3 REFERENCES

A. ACPA - American Concrete Pipe Association

B. ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

C. ASTM C150 - Portland Cement

D. ASTM C443 - Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets

E. ASTM C478 – Precast Concrete Structures

F. ASTM C497 - Testing Concrete Pipe, Manhole Sections, or Tile

G. ASTM A48 - Gray Iron Castings

H. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement

I. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

J. ASTM C33 - Concrete Aggregates

K. ASTM C478 - Precast Reinforced Concrete Manhole Sections

L. ASTM C990 – Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

M. ASTM D2321 – Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

N. ASTM D3212 – Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

O. ASTM F477 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe

P. ASTM F2881 – 30 to 60 in. [762 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

Q. Michigan Department of Transportation Standard Specifications for Road and Bridge Construction

1.4 DESIGN REQUIREMENTS

A. Comply with applicable requirements of ASTM C76

B. Comply with applicable requirements of ASTM D2321

C. Comply with Cass County, Michigan Department of Public Health and Environment Stormwater and/or

Groundwater Discharge Permit and related storm design criteria. If standards conflict, the more stringent criteria shall govern.

1.5 SUBMITTALS

A. Submit under provisions of Division One Specifications

B. Shop Drawings: Provide drawings with pipe and structure details, design standards, reinforcement, dimensions, etc. Provide additional detailed information (including elevations, fittings, specialty materials or fabrications, etc.) for special or custom features, structures, junctions and/or pipes. Provide pipe-laying schedule.

C. Product Data: Provide sufficient data on features, pipe, joints, gasket material, lubricant and accessories to verify compliance with specifications.

D. Manufacturers Certificate: Certify that pipe, meets or exceeds specified requirements. Confirm all materials comply with applicable standards.

E. Test Reports: Submit all shop and field test reports in accordance with Division One Specifications

F. Provide sufficient data to verify compliance with these specifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. Ship rubber gaskets in cartons and store in a clean area away from grease, oil, ozone producing electric motors, heat and the direct rays of the sun

B. Storage

1. Store pipe, fittings and gaskets in clean locations protected from environmental conditions such as: (direct sunlight, mud, etc.)
2. Do not use pipe and fittings stored in direct sunlight for periods in excess of 18 months
3. Store pipe on a flat surface which provides even support for the barrel with bell ends overhanging
   a. Do not stack pipe higher than 5 feet
4. All pipe and fittings shall be delivered to the site and unloaded with handling that conforms to the manufacturer's instructions for reasonable care. Pipe shall not be rolled or dragged over gravel or rock during handling. The Contractor shall take necessary precautions to ensure the method used in lifting or placing the pipe does not induce undue stress fatigue in the pipe.

C. Handling

1. Handle so as to insure installation in sound undamaged condition.
2. Use equipment, tools and methods for unloading, reloading, hauling and laying that do not damage pipe or cause an impact. Damaged pipe will be cause for rejection
3. Use hooks or straps with broad, well-padded contact surfaces for lifting sections of pipe

1.7 ENVIRONMENTAL REQUIREMENTS

A. Weather limitations: Do not install piping over frozen surfaces or in standing water.

PART 2 GENERAL PRODUCTS

2.1 PIPE AND FITTINGS MATERIALS

A. Comply with Cass County standards and specifications for public storm sewer products.

B. General: Provide pipes of one of the following materials, of weight/class indicated. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated

C. Fittings: Furnish bends, ells, tees, wyes, couplings and other fittings of the same type and class of material having equal or superior physical and chemical properties as acceptable to the Engineer

D. Reinforced Concrete Pipe: ASTM C76,

1. 12-inch RCP Class V, with modified tongue-and-groove compression gasket joints complying with ASTM C443.
2. 15-inch RCP Class IV (Class V when specified on plans), with modified tongue-and-groove compression gasket joints complying with ASTM C443.
3. 18-inch thru 24-inch RCP Class III (Class IV or V when specified on plans), with modified tongue-and-groove compression gasket joints complying with ASTM C443.
4. 24-inch thru 36-inch RCP Class II (Class III, IV or V when specified on plans), with modified tongue-and-groove compression gasket joints complying with ASTM C443.

E. PVC Sewer Pipe: ASTM D3034, Type PSM, SDR 35 with PVC, elastomeric joints complying with ASTM D3212 using elastomeric seals complying with ASTM F477.

F. Corrugated Polypropylene (PP) storm sewer pipe

1. Twelve- through 60-inch (300 through 1500 mm) pipe shall be smooth interior and annular exterior corrugated polypropylene (PP) pipe meeting the requirements of ASTM F2881 or AASHTO M330, Type S, for respective diameters. The pipe supplied shall be watertight as defined in the joint performance requirements of this specification.
2. Virgin material for 12- through 60-inch pipe and fitting production shall be an impact modified copolymer meeting the material requirements of ASTM F2881 and AASHTO M330, for respective pipe diameters.
3. Watertight joints shall be bell-and-spigot meeting the watertight requirements of ASTM F2881. Gaskets shall be made of polyisoprene meeting the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

2.2 MATERIALS

A. Comply with Cass County standards and specifications for public storm sewer products.

B. Plugs and Caps: Use pipe plugs or caps provided by the pipe manufacturer and approved by the Engineer for pipe stubouts.

C. Cleanouts: Provide as indicated, pipe extension to grade with ferrule and countersink cleanout plug. Provide round cast-iron access frame over cleanout, with heavy duty secured scoriated cover with lifting device cast with the word “STORM”.

D. Reinforcement
   1. Reinforcing Steel: ASTM A615 Grade 60
   2. Welded Wire Fabric: ASTM A185

E. Concrete:
   1. Minimum compressive strength: ASTM C39, 4500 psi at 28 days
   2. Cement: ASTM C150, Portland Cement, Type II
   3. Aggregates: ASTM C33, free of deleterious substances

F. Gaskets:
   1. ASTM C990 for preformed flexible joint sealants
   2. FS SS-S-210A, "RAM-NEK" or accepted substitution
   3. Rubber: 40± 5 hardness when measured by ASTM D2240, Type A durometer

G. Inlet Gratings and Manhole Rings and Covers
   1. Cast iron, heavy duty traffic type, ASTM A48, Class 35B. Grind bearing surfaces to ensure flat, true surfaces
   2. Provide bike/pedestrian-safe grates where such traffic is anticipated
   3. Set grate on frame such that openings maximize inlet intake
   4. Covers to seat at all points on ring
   5. Covers to be cast with "STORM" in 2-inch tall flush letters
   6. Manhole covers to receive asphalt varnish coating hot dip applied at foundry, 6 mils thick

H. Manhole Height Adjustment: Use precast concrete grade rings

I. Rock Subbase: 1-1/2 inch minus, well-graded gravel over compacted subgrade

J. Water: Clean and free of deleterious substances

K. Grout:
   1. Non-Shrink, Non-Metallic Grout: Factory premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 4000 psi in one day and 8000 psi in 7 days

2. Epoxy Grout: Three Component Epoxy Resin System
    i) Two liquid epoxy components
    ii) One inert aggregate filtered component
    iii) Each component furnished in separate package for mixing at job site

2.3 CONCRETE CATCH BASINS AND MANHOLES

A. Comply with Cass County standards and specifications for public storm sewer products.

B. Precast Concrete Units:
    1. Manufacturers: Carder Concrete Products, Amcor Precast, or accepted equal
    2. Specification: ASTM C478 and C789
    3. Minimum wall thickness: greater of 6 inches or 1/12 of internal diameter
    4. Reinforced
    5. Grade rings as required
    6. Cast steps into units.

C. Precast Units or Cast-in-place as shown. Use concrete that will attain a 28-day compressive strength of not less than 4,500 psi with a cement content of not less than 6 sacks per cu. yd. Openings to be precast per plan or sawcut in field.

D. Cast-in-place Concrete Units: As shown on the drawings complying with the Cass County, and Michigan Department of Transportation drainage and design standards.

E. Manhole Steps: Steel bar, 1/2 inch Grade 60, drop-front type, with polypropylene coating applied by manufacturer, Type MA Industries, Inc. "PS2-PF" or equal

2.4 PVC PLASTIC INLINE DRAINS AND DRAIN BASINS

A. Manufacturer: Nyloplast America Inc. or accepted substitution.

B. Inline drains and drain basins shall be manufactured from PVC pipe stock, utilizing a thermo molding process to reform the pipe stock to the furnished configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. The joint tightness shall conform to ASTM D3212.

C. Surface drainage products shall meet the mechanical property requirements for fabricated fittings as described in ASTM F794, F949 and F1336.

D. Inline drain and drain basin adapters and accessories
    1. Adaptable to SDR-35 PVC piping.
    2. Watertight adaptors.

E. Cast iron or ductile iron frames and grates:
    1. Light –traffic rated

2. Pedestrian rated
3. Hinged and locking
4. Made specifically for use with the specified inline drains and drain basins
5. Painted black
6. ASTM A-48-83 Class 30B or A536 grade 70-50-05 grade iron
7. Size indicated on the drawings

2.5 CONCRETE FABRICATION

A. Comply with Cass County standards and specifications for public storm sewer products.

B. Vault/Manhole Sections

1. Precast concrete dimensions as shown on plans
2. Minimum manhole inside diameter: 48 inch
3. Precast lid and Cones: Same or greater reinforcement and wall thickness as vault or manhole section with capability for H20 loading
4. Vault Joints: Shiplap or tongue and groove with double mastic gaskets, each joint to set equally and tightly
5. Manhole Joints: Keylock type with double mastic gaskets, each joint to set equally and tightly
6. Access opening: Minimum 24-inch clear or as indicated
7. Pipe connection: As indicated on Drawings
8. Pipe knockout: As indicated on Drawings
9. Precast concrete, monolithic base or cast-in-place base
10. Manhole steps: 12-inch on center, vertical alignment above largest bench or open area

C. Grating and Metal Frame: As specified on drawings

2.6 SOIL MATERIALS

A. Comply with Cass County standards and specifications for public storm sewer products.

B. Furnish pipe bedding and cover as specified in Section 31 0000 – Earthwork.

C. Riprap Materials:

1. Hard, dense, durable stone, angular in shape and resistant to weathering
2. Minimum specific gravity of 2.5
3. Material may be approved by Engineer, if by visual inspection, the rock is determined to be sound and durable
4. Engineer may require Contractor to furnish laboratory test results if the material appears to be marginal or unacceptable
5. Tested material shall meet the following requirements for abrasion resistance or compressive strength:

Test	Test Method	Requirement
Abrasion Resistance by Los Angeles Machine	ASTM C 535	50% loss, max
Unconfined Compressive Strength of Drilled Core Specimen	AASHTO T 24	2500, min

6. Contractor shall provide a five ton sample of riprap indicating the compliance to required material soundness and gradation specifications if requested by the Engineer.

7. Gradation:

Riprap Designation	% Smaller Than Given Size By Weight	Intermediate Rock Dimension (Inches)	Mean Particle Size, d_{50} (Inches)
D_{50} = 9”	70-100	15	9
	50-70	12	
	35-50	9	
	2-10	3	
D_{50} = 12”	70-100	21	12
	50-70	18	
	35-50	12	
	2-10	4	
D_{50} = 18”	70-100	30	18
	50-70	24	
	35-50	18	
	2-10	18	
		6	

8. Granular Riprap Bedding:
   a. 3/4” – 1” Crushed rock – AASHTO 57/67

Sieve Size (Inch)	Percent Passing by Weight
1	100
3/4”	90-100
1/2”	25-60
3/8”	20-55
NO. 4	0-10
NO. 8	0-5
NO. 200	0-2

D. Pipe Bedding:
   1. Refer to Section 31 0000 – Earthwork
   2. Minimum 6 inch deep, unless specified otherwise

E. Drainage Fabric: Mirafi 140N or accepted substitute.

PART 3 EXECUTION

3.1 REGULATORY REQUIREMENTS

A. Comply with Cass County standards and specifications for public storm sewer installation.

3.2 PIPE PREPARATION

A. Shape trench and place bedding as specified in Section 31 0000 and as shown on the drawings.
   1. Dig bell or coupling holes
   2. Do not support pipe on blocks or mounds of earth.
   3. Provide uniform and continuous bearing and support for full length of pipe between bell holes
   4. Minor disturbance over a maximum length of 18 inches near the middle of each length of pipe will be permissible by the withdrawal of pipe slings or other lifting tackle

B. Alignment and Grade
   1. Except as indicated on the Drawings, lay all pipe straight and at a uniform grade.
   2. Use batter boards to determine and check pipe subgrades.
   3. Other methods of maintaining alignment and grade may be acceptable if approved by the Engineer.

3.3 PIPE INSTALLATION

A. Inspect pipe and accessories for defects before lowering into trench.

B. Replace any defective, damaged or unsound pipe.

C. Carefully lower pipe, fittings, and accessories into the trench with derricks, ropes, and other suitable equipment to prevent damage. Do not dump or drop pipe or accessories into trench.

D. Pipe embedment shall be as specified in Section 31 0000 for pipe.

E. Protect from lateral displacement by placing the specified pipe embedment material.

F. Do not lay pipe in water, under unsuitable weather conditions or under unsuitable trench conditions

G. Joint to form true and smooth line.

H. Remove any pipe not making a good fit.

I. Begin pipe laying at the lowest point unless reverse laying is accepted by Engineer.

J. Utilize implements, tools and facilities as recommended by the manufacturer and/or catch basins if required to remove debris.

K. Keep pipe clean during and after laying.

L. During construction, close all open ends with watertight expandable type plugs.
   1. At the end of each day's operations.
   2. Whenever pipe ends are left unattended.
   3. Deposit adequate backfill on pipe to prevent flotation.
   4. Do not use wood, burlap or other similar temporary plugs.

M. Remove and re-lay any pipe which has floated.

3.4 PIPE INSTALLATION – POLYPROPYLENE PIPE

A. Any pipe, fittings, or drainage structures with cuts, punctures, or other damage on the interior or exterior shall be rejected and replaced.

B. Any pipe, fittings or drainage structures with damaged ends or joints, which would prevent proper sealing of the joints, shall be rejected and replaced.

C. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm and drainage piping system. Location and arrangement of piping layout take design considerations into account. Install piping system as indicated herein and as directed by the product manufacturer, to extent practical. Where specific installation procedure is not indicated, follow product manufacturer's written instructions.

D. All products shall be inspected for defects and cracks before being lowered into the trench, piece by piece. Any defective, damaged or unsound pipe, fitting or drainage structure or any product that has had its grade disturbed after laying, shall be taken up and replaced. Open ends shall be protected with a pipe plug to prevent earth or other material from entering the pipe during construction. The interior of the pipe shall be free from dirt, excess water and other foreign materials as the pipe laying progresses and left clean at the completion of the installation.

E. Install piping system beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions. Follow product manufacturer's instructions for the use of lubricants, cements, and other special installation requirements.

F. Use Manholes or Catch Basins for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.

G. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

H. Trench Excavation

1. Excavate trenches to ensure that sides will be stable under all working conditions. Slope trench walls or provide supports in conformance with all local and national standards for safety. Open only as much trench as can be safely maintained by available equipment. Backfill all trenches as soon as practicable, but not later than the end of each working day.
2. Where trench walls are stable or supported, provide a width sufficient, but no greater than necessary, to ensure working room to properly and safely place and compact haunching and other embedment materials. The space between the pipe and trench wall must be wider than the compaction equipment

used in the pipe zone. Minimum width shall be not less than the greater of either the pipe outside diameter plus 16 in. or the pipe outside diameter times 1.25, plus 12 in. In addition to safety considerations, trench width in unsupported, unstable soils will depend on the size and stiffness of the pipe, stiffness of the embedment and in-situ soil, and depth of cover.

3. When supports such as trench sheeting, trench jacks, trench shields or boxes are used, ensure that support of the pipe and its embedment is maintained throughout installation. Ensure that sheeting is sufficiently tight to prevent washing out of the trench wall from behind the sheeting. Provide tight support of trench walls below viaducts, existing utilities, or other obstructions that restrict driving of sheeting.

I. Bedding

1. A stable and uniform bedding shall be provided for the pipe and any protruding features of its joint and/or fittings. The middle of the bedding, equal to one-third of the pipe outside diameter, shall be loosely placed while the remainder shall be compacted to a minimum of 90% of maximum density per AASHTO T99, or as shown in the plans. Pipe bedding shall be a minimum of 4" – 6" in thickness. The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe.

J. Placing Pipe

1. Each pipe shall be thoroughly examined before being laid; defective or damaged pipe shall not be used. Pipelines shall be laid to the grades and alignment indicated. Proper facilities shall be provided for lowering sections of pipe into trenches. Pipe shall not be laid in water, and the pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches shall be provided as directed by the engineer; see dewatering section.

K. Jointing

1. Joints shall be constructed as described herein and in accordance with manufacturer's installation instructions.
2. All Bell-and-Spigot pipe joints shall be thoroughly cleaned. Joint lubricant, supplied by the manufacturer, shall be liberally applied to entire interior of bell and gasket on spigot prior to assembly.

L. Backfilling

1. Backfill placement and compaction shall be constructed in accordance with the specifications herein and the product manufacturer's published installation guides.
2. After the pipe and pipe system have been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall be placed along both sides of pipe in layer depths to ensure minimum compaction density is obtained evenly throughout the backfill

material. The backfill shall be brought up evenly on both sides of pipe and pipe system for the full length of pipe. The fill shall be thoroughly compacted under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation of at least 6 inches above the top of the pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 8-inches. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below. Where it is necessary, in the opinion of the Engineer, that sheeting or portions of bracing used be left in place, the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

3. For pipe placed in fill sections, fill shall be constructed to at least 6 inches above the top of proposed pipe prior to trench excavation. Fill shall be placed in 12 inch lifts and shall be compacted to achieve 90% of maximum density, or as shown on plans. Once fill is placed and compacted pipe trench shall be constructed in accordance with the Trench Excavation section of this specification.

3.5 PRECAST STRUCTURE PREPARATION

A. Verify items provided by other section of Work are properly sized and located
B. Verify that built-in items are in proper location, ready for roughing into Work
C. Verify excavation for manholes is correct
D. Excavation and Backfill: Refer to Section 31 0000 - Earthwork for requirements
E. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections
F. Rock Subbase: Remove water, excavate, and place 1-1/2 inch washed rock 6-inch minimum depth, vibrate for compaction

3.6 CATCH BASINS

A. Construct catch basins to the sizes and shapes indicated, and to conform to requirements of authorities having jurisdiction.
   1. Rock Subbase: Remove water, excavate, and place 1-1/2 inch washed rock 6-inch minimum depth, vibrate for compaction
   2. For precast units, set in place to accurate elevations on firm, solid bed, plumb and level.
   3. Pipe openings, elevations and alignment per plans
   4. Seal and grout all pipe penetrations
   5. Set cast iron frames and gratings to the elevations indicated.

3.7 PLACING MANHOLE SECTION OR CAST-IN PLACE BASE

A. Rock Subbase: Remove water, excavate, and place 1-1/2 inch washed rock 6-inch minimum depth, vibrate

for compaction

B. Place base pad, trowel top surface level to accept manhole section with uniform bearing all around

C. Place sufficient non-shrink grout on base to ensure watertight fit between first manhole section and base or place first manhole section directly in wet concrete

D. Place manhole sections plumb and level, trim to correct elevations

E. Clean ends of sections and place double mastic gasket

F. Fill inside and outside of joint completely with non-shrink grout and trowel smooth

G. Cure non-shrink grout using approved methods

H. Set cover rings and covers level without tipping, to correct elevations or set cover rings and covers with slight tip to match cross slope of finished surface where directed by Engineer

I. Completed manholes shall be rigid and watertight

J. Coordinate with other sections of work to provide correct size, shape, and location

3.8 PREFORMED GASKETS

A. Remove and replace manhole sections which have chipped or cracked joints

B. Thoroughly clean section joints

C. Install gasket in conformance with manufacturer's recommendations

D. Only use primer furnished by gasket manufacturer

3.9 MANHOLE INVERT

A. Place concrete in bottom of manhole and form smooth transition. Trowel smooth and brush for non-skid finish. Slope bench 1 inch per foot for drainage to invert.

B. Invert shape to conform to radius of pipe it connects

C. Remove all rough sections or sharp edges which tend to obstruct flow or cause material to snag. Remove all grout droplets from invert

D. Construct in conformance with standard drawings

3.10 MANHOLE RINGS AND COVERS

A. Place rings in bed of non-shrink grout on top of manholes

B. Ensure no infiltration will enter manhole at this location

C. Carry non-shrink grout over flange of ring

D. Set top of ring flush with all surfaces subject to foot and vehicular traffic

E. Set top of ring 6 inches above surfaces in open, unraveled, non-pedestrian areas

F. Use precast grade rings for height adjustment

3.11 CONNECTION TO EXISTING MANHOLES

A. Maintain flow at all times

B. Prior approval of proposed method for maintaining flow must be obtained from Engineer

C. Cover area around new pipe with non-shrink grout and or waterstop gasket to ensure a watertight structure

D. Make connection during low flow periods

3.12 GROUT

A. PREPARATION

1. Non-Shrink, Non-Metallic Grout, General Use
   a. Clean concrete surface to receive grout
   b. Saturate concrete with water for 24 hrs prior to grouting and remove excess water just prior to placing grout
   c. Cold weather conditions
      i) Warm concrete, substrate and base plate to 40 deg F, or above; store grout in warm area
      ii) Follow manufacturer's recommendations for cold weather application
   d. Hot weather conditions
      i) Use cold mixing water and cool base plate if possible; store grout in cool area
      ii) Follow manufacturer's recommendations for hot weather application
   e. Apply to clean, sound surface
   f. Apply latex bonding agent to hardened concrete, mix-in-grout, or as directed by Engineer
2. Epoxy Grout: Apply only to clean, dry, sound surface
   a. Patching cavities in concrete including, but not limited to, tie holes, and structural and equipment support

B. APPLICATION

1. Non-Shrink, Non-Metallic Grout
   a. Mix in a mechanical mixer
   b. Use no more water than necessary to produce flowable grout
   c. Provide air vents where necessary to eliminate air pockets
   d. Place in accordance with manufacturer's instructions
   e. Where exposed to view finish grout edges smooth
   f. Protect against rapid moisture loss by immediately covering with wet rags and polyethylene sheets or curing compound
   g. Wet cure grout for 7 days, minimum
   h. Maintain the temperature at a minimum of 40 deg F until grout reaches 3000 psi
   i. After placement of grout, eliminate excessive external vibration
2. Epoxy Grout

a. Mix and place in accordance with manufacturer's instructions
b. Completely fill all cavities and spaces around dowels and anchors without voids
c. Obtain manufacturer's technical assistance as required to insure proper placement

3.13 RIPRAP

A. Do not place riprap over frozen or spongy subgrade surfaces.
B. Place riprap at pipe outlets and in channels as indicated on plans. Top of riprap to match invert of outlet pie and channels.
C. Excavate and prepare subgrade.
D. Place geotextile fabric per plans under all bedding. Place bedding and place riprap on bedding per plans.
E. Material may be machine placed and then arranged as necessary by use of a Gradall with multi-prong grapple device or by hand to minimize voids. Dumping alone is not sufficient to achieve properly placed riprap.

3.14 FIELD QUALITY CONTROL

A. Field inspection and testing including a lamp test will be performed for every section of pipe after backfill has occurred
1. Contractor shall furnish suitable assistance to the Engineer
2. A minimum of 75% of a true circle will be required to indicate a properly constructed line
3. Contractor will repair any section not passing the lamp test.
B. Request inspection immediately after placing cover over pipe.
C. Backfilling and testing as required per Section 31 0000 - Earthwork.

END OF SECTION

This page intentionally left blank.

EDWARDSBURG INTERMEDIATE SCHOOL

EDWARDSBURG PUBLIC SCHOOLS
Edwardsburg, Michigan
CONSTRUCTION DOCUMENTS - BP4

DESIGN TEAM

ARCHITECT/ENGINEER

TowerPinkster
Architecture · Engineering · Interiors

242 E. KALAMAZOO AVE, SUITE 100
KALAMAZOO, MICHIGAN 49007
PHONE: 269.343.6133
FAX: 269.343.6633

CONSTRUCTION MANAGER

SKILLMAN

8120 MOORSBRIDGE RD., SUITE 101
PORTAGE, MI 49024
PHONE: 269.350.5757
FAX: 269.903.2869

SITE ADDRESS

EDWARDSBURG INTERMEDIATE SCHOOL
27157 US 12
EDWARDSBURG, MI 49112

REFERENCED CODES

BUILDING:	2015 MICHIGAN BUILDING CODE AND 2012 NFPA 101 LIFE SAFETY CODE
BUILDING:	2015 MICHIGAN REHABILITATION CODE
ENERGY:	2015 MICHIGAN ENERGY CODE
PLUMBING:	2021 MICHIGAN PLUMBING CODE
MECHANICAL:	2021 MICHIGAN MECHANICAL CODE
FUEL GAS:	(IFGC) 2021 INTERNATIONAL FUEL GAS CODE
ELECTRICAL:	2023 NATIONAL ELECTRICAL CODE WITH MICHIGAN AMENDMENTS
BARRIER-FREE:	2015 MICHIGAN BUILDING CODE AND 2009 ICC & C A117.1
USE GROUP:	E AND A-1
CONSTRUCTION TYPE:	IIB
AUTOMATIC SPRINKLERS:	SPRINKLED

PROJECT AREA

TOTAL BUILDING AREA:	62,089 SQ. FT.
AREA OF RENOVATION:	1,977 SQ. FT.

ALTERNATES

ALTERNATE 01: ALL WORK ASSOCIATED WITH SOUTH CANOPY AS SHOWN ON ROOF PLANS AND CIVIL DRAWINGS — A2

DRAWING INDEX

TowerPinkster
Architecture · Engineering · Interiors

TowerPinkster
Architecture · Engineering · Interiors
TOWERPINKSTER.COM

ADDENDUM #2	03-13-2025
ISSUED FOR	DATE

PROJECT TITLE
EDWARDSBURG INTERMEDIATE SCHOOL

OWNER
EDWARDSBURG PUBLIC SCHOOLS
Edwardsburg, Michigan

DATE
FEBRUARY 10, 2025

SHEET TITLE
COVER SHEET

SHEET NUMBER
G 001
21-201.030

KEYED NOTED - ARCHITECTURAL ROOF - DEMOLITION

1 FIELD VERIFY LENGTH AND WATTAGE OF EXISTING HEAT TRACE CABLE. REMOVE EXISTING HEAT TRACE CABLE ON PORTION OF ROOF AND PIPES AND PREP FOR NEW. REFER TO ELECTRICAL PLANS FOR CIRCUITING

2 REMOVE EXISTING EPDM ROOF MEMBRANE AND EDGE METAL. EXISTING INSULATION TO REMAIN (AREA SHOWN WITH CROSS HATCH)

3 REMOVE HEAT TRACE CABLE ON PORTION OF ROOF AND PIPES

4 REMOVE ALL INSULATION, ROOF MEMBRANE, ROOF DRAIN AND EDGE METAL (AREA SHOWN WITH CROSS HATCH)

A2

A1

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

EDWARDSBURG INTERMEDIATE SCHOOL

UNIT A UNIT B UNIT C UNIT D

KEY PLAN
SCALE: NO SCALE

SHEET TITLE
OVERALL ROOF DEMOLITION PLAN

OWNER
EDWARDSBURG PUBLIC SCHOOLS
Edwardsburg, Michigan

DATE
FEBRUARY 10, 2025

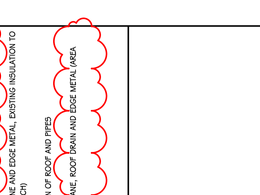
SHEET NUMBER
AD 102

21-201.030

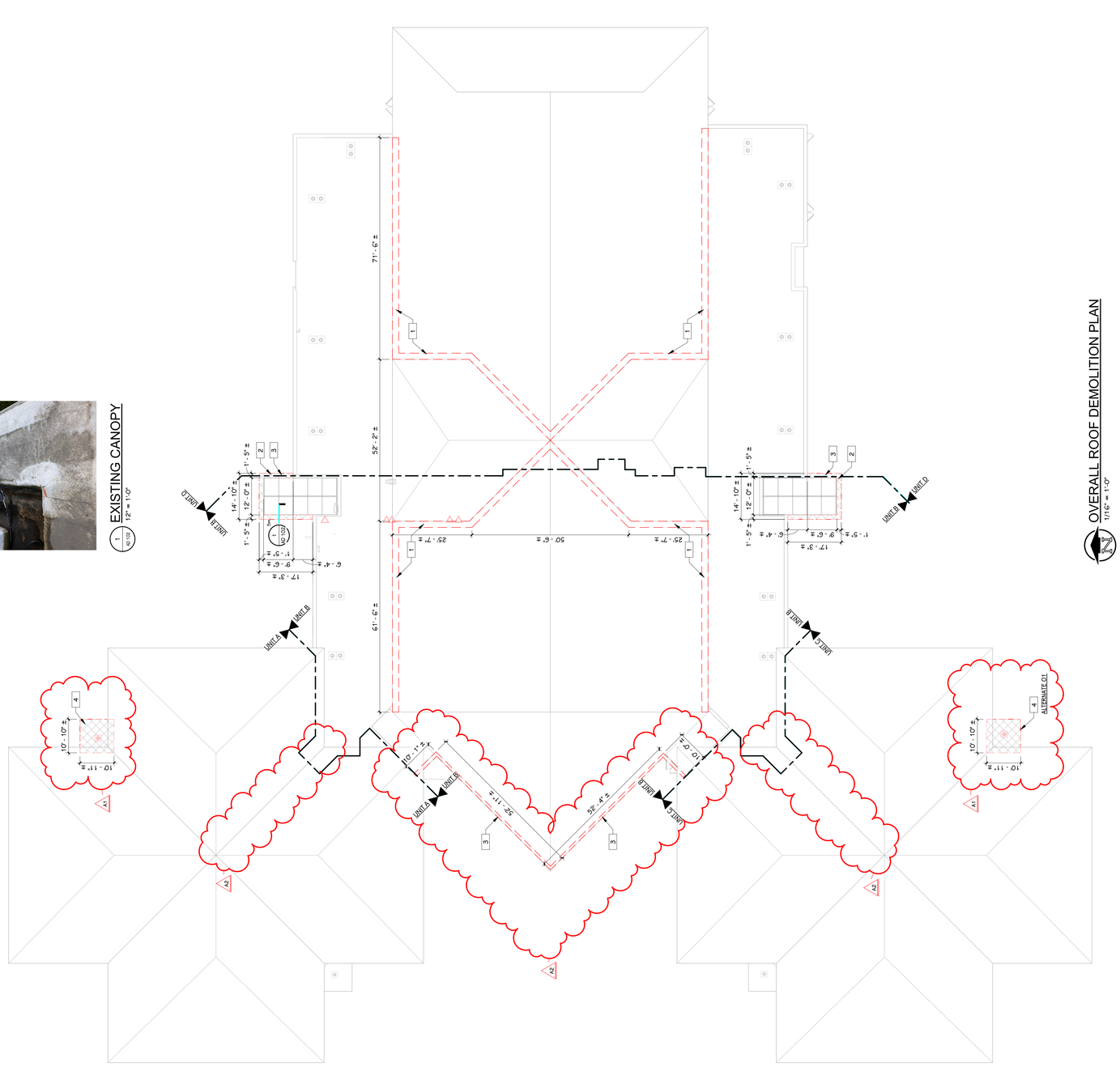
PROJECT TITLE
EDWARDSBURG INTERMEDIATE SCHOOL

ISSUED FOR	DATE
ADDENDUM #2	03-13-2025
ADDENDUM #1	03-07-2025

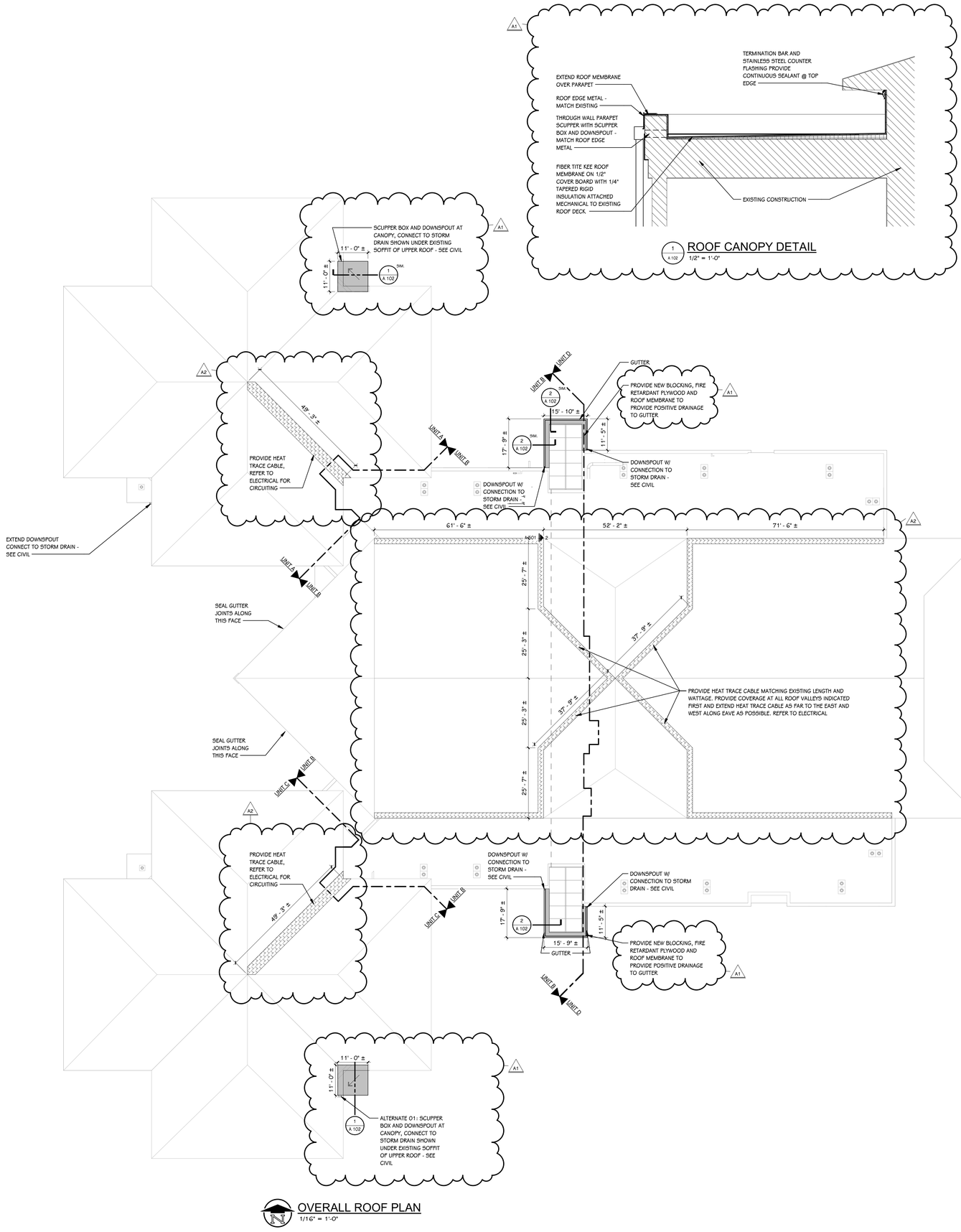
TowerPinkster
Architecture · Engineering · Interiors
TOWERPINKSTER.COM



1 EXISTING CANOPY
AD 102
12" = 1'-0"



OVERALL ROOF DEMOLITION PLAN
1/16" = 1'-0"



ROOF PLAN KEY

A1 — FIBER TITE KEE MEMBRANE ROOF SYSTEM WITH MECHANICALLY FASTENED 1/2" COVER BOARD AND NEW TAPERED INSULATION TO DIRECT WATER TO NEW SCUPPER AS SHOWN ON PLAN

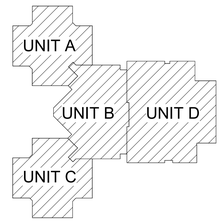
HEAT TRACE CABLE - PROVIDE TYPICAL "W" PATTERN

R.D.	ROOF DRAIN - REFER TO PLUMBING DRAWINGS
O.D.	OVERFLOW DRAIN - REFER TO PLUMBING DRAWINGS
←	ROOF SLOPE DUE TO TAPERED INSULATION OR SLOPED STRUCTURE - REFER TO STRUCTURAL DRAWINGS
AHU OR RTU	ROOF TOP UNIT - REFER TO MECHANICAL DRAWINGS
ACCU	CONDENSING UNIT - REFER TO MECHANICAL DRAWINGS
E.F.	EXHAUST FAN / HOOD - REFER TO MECHANICAL DRAWINGS

NOTES

1. PROVIDE ROOF MANUFACTURER'S STANDARD ROOFING TERMINATION DETAILS AT ALL PARAPETS, PRE-MANUFACTURED ROOF EDGE SYSTEMS, CURBS, PIPE PENETRATIONS, ETC.
2. PROVIDE CRICKETS AS REQUIRED AT ALL MECHANICAL UNITS, VENTS, ETC. TO MAINTAIN POSITIVE SLOPE
3. FIELD VERIFY ALL ROOF DRAIN LOCATIONS PRIOR TO INSTALLATION OF NEW ROOF.

EDWARDSBURG INTERMEDIATE SCHOOL



KEY PLAN
SCALE: NO SCALE

TowerPinkster
Architecture · Engineering · Interiors
TOWERPINKSTER.COM

ISSUED FOR	DATE
ADDENDUM #2	03-13-2025
ADDENDUM #1	03-07-2025

PROJECT TITLE
EDWARDSBURG INTERMEDIATE SCHOOL

OWNER
EDWARDSBURG PUBLIC SCHOOLS

Edwardsburg, Michigan

SHEET TITLE
OVERALL ROOF PLAN

DATE
FEBRUARY 10, 2025

SHEET NUMBER
A 102
21-201.030

GENERAL ROOF PLAN NOTES

A NEW HEAT TRACE CABLE TO MATCH EXISTING WATTS PER FOOT (12W/FT MAXIMUM) OF EXISTING/DEMOLISHED HEAT TRACE CABLE. DO NOT EXCEED 200 LINEAR FEET PER CIRCUIT.

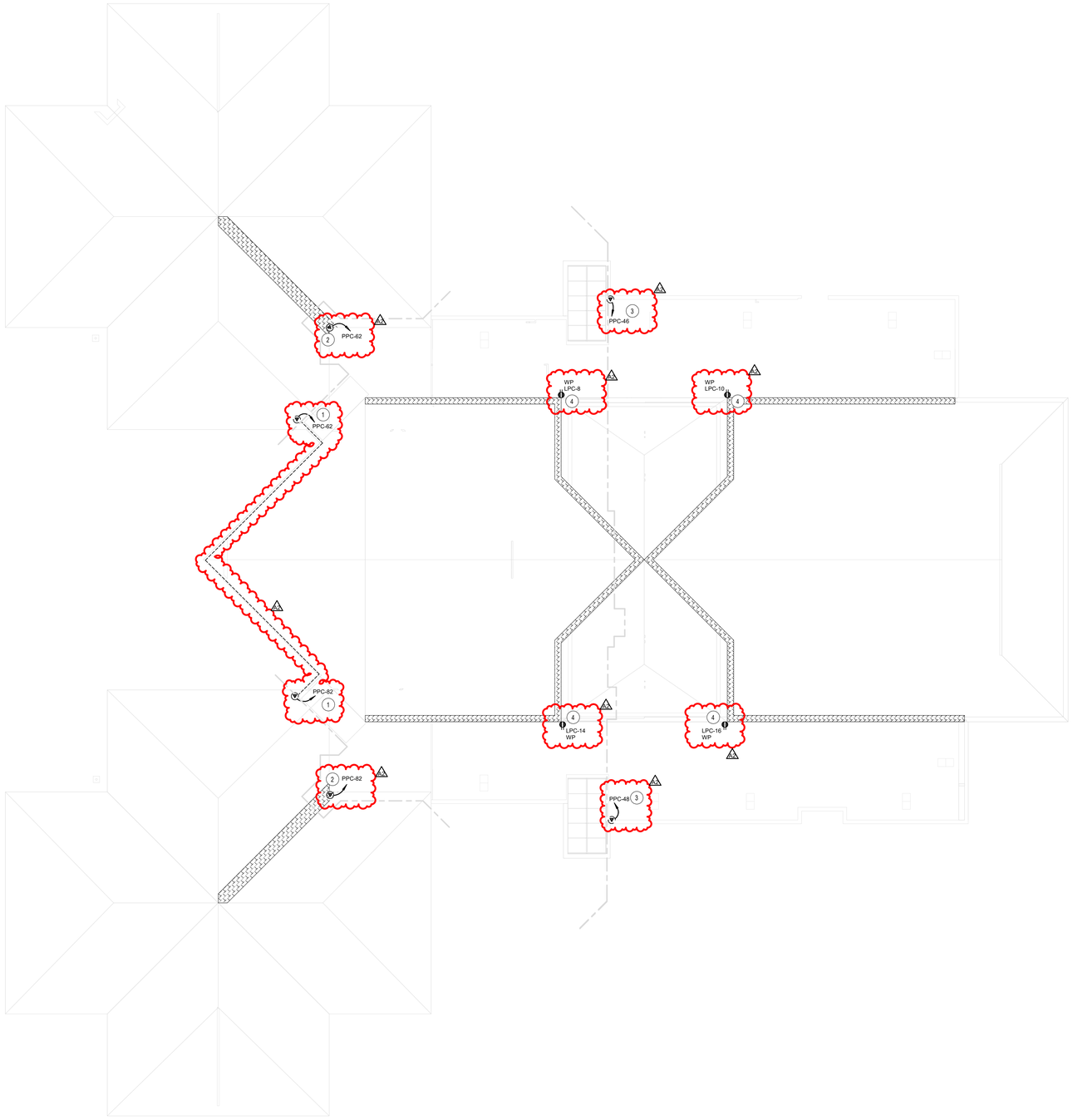
ROOF PLAN KEYNOTES:

1 DEMO EXISTING HEAT TRACE CABLE, REUSE EXISTING CIRCUIT FOR NEW HEAT TRACE CABLE IN NEW LOCATION.

2 EXTEND EXISTING HEAT TRACE CIRCUIT TO NEW LOCATION, CONNECT TO NEW HEAT TRACE CABLE.

3 DEMO EXISTING HEAT TRACE CABLE AND CIRCUIT BACK TO SOURCE, RELABEL EXISTING CIRCUIT BREAKER AS SPARE.

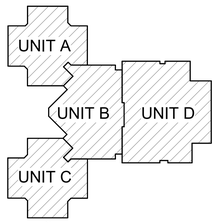
4 DEMO EXISTING EXTERIOR RECEPTACLE AND RACEWAY BACK TO NEAREST INTERIOR JUNCTION BOX, FIELD VERIFY EXISTING CIRCUIT NUMBER. PROVIDE NEW RACEWAY AND RECEPTACLE IN SAME LOCATION FOR NEW HEAT TRACE CABLE, REUSE EXISTING CIRCUIT.



N

OVERALL ROOF ELECTRICAL PLAN
SCALE: 1/16" = 1'-0"

EDWARDSBURG INTERMEDIATE SCHOOL



KEY PLAN
SCALE: NO SCALE

TowerPinkster
Architecture · Engineering · Interiors
TOWERPINKSTER.COM

ADDENDUM #2 03-13-2025

ISSUED FOR DATE

PROJECT TITLE
EDWARDSBURG INTERMEDIATE SCHOOL

OWNER
EDWARDSBURG PUBLIC SCHOOLS

Edwardsburg, Michigan

SHEET TITLE
OVERALL ROOF ELECTRICAL PLAN

DATE
FEBRUARY 10, 2025

SHEET NUMBER
E 302
21-201.030

TowerPinkster
Architecture · Engineering · Interiors

ADDENDUM NO. 2

DATE OF ISSUANCE:	**March 13, 2025**
PROJECT:	**Edwardsburg Primary School - Renovation** **69100 Section St** **Edwardsburg, MI 49112**
OWNER:	**Edwardsburg Public Schools**

ARCHITECT'S PROJECT NO.: 21-201.010

ORIGINAL BID ISSUE DATE: February 10, 2025

SCOPE OF WORK

This Addendum includes changes to, or clarifications of, the original Bidding Documents and any previously issued addenda, and shall be included in the Bid. All of these Addendum items form a part of the Contract Documents. The Bidder shall acknowledge receipt of this Addendum in the appropriate space provided on the Bid Form. Failure to do so may result in disqualification of the Bid.

DOCUMENTS INCLUDED IN THIS ADDENDUM

This Addendum includes **1** pages of text and the following documents:

- Bidding Documents: **None**
- Contract Conditions: **None**
- Specification Sections: **28 1300**
- Drawings: **None**

CHANGES TO PREVIOUSLY ISSUED ADDENDA

See ADD-2 Item No. S-1

CHANGES TO SPECIFICATIONS

ADD-2 Item No. S-1 - Removed Galaxy Access Control Controllers and Sub Contractor Requirements

Refer to Specification Section: 28 1300

Removed Galaxy Access control components. The system should be a complete DMP system. Also removed the requirement to sub contract Koorsen Fire and Security.

END OF ADDENDUM.

SECTION 28 1300 - ACCESS CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Failure to consult these documents shall not relieve the Contractor of the requirements therein.

1.2 SUMMARY

A. This Section includes the following:

1. Security Access Devices.
2. Access Control Panel.

1.3 RELATED SECTIONS

A. Section 087100 –Door Hardware
B. Division 26 Section "Electrical" for connections to electrical power system and for low-voltage wiring work.
C. Division 27 Section "Communications" for connections to the LAN.

1.4 REFERENCES

A. ANSI A117.1 (1998) - Accessible and Usable Buildings and Facilities.
B. IBC 2009 - International Building Code.
C. NFPA 70 (2008) - National Electrical Code.
D. NFPA 80 - Fire Doors and Windows.
E. NFPA 101- Life Safety Code.
F. UL 294 - Access Control Systems.
G. UL 1076 - Proprietary Burglar Alarm Units and Systems.
H. Local applicable codes.

1.5 SYSTEM DESCRIPTION

A. Security Access System.

1. Selected Exterior Doors: Control access into Building.
2. Selected Building Areas: Control access into selected areas indicated.
3. System shall be compatible with existing Galaxy System, Software version 9.X or higher

1.6 SUBMITTALS

A. Shop Drawings: Provide system wiring diagram showing each device and wiring connection required.

B. Product Data: Provide electrical characteristics and connection requirements.

C. Test Reports: Indicate satisfactory completion of required tests and inspections.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

E. Project Record Documents: Record actual locations of access authorization equipment.

F. Operation Data: Operating instructions.

G. Maintenance Data: Maintenance and repair procedures.

1.7 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty years documented experience and with service facilities within 100 miles of Project.

C. Installer Qualifications: Company specializing in installing the products specified in this section with minimum Installer Qualifications: Systems Integrators, verifiably factory trained and certified by the primary product manufacturers, with documented experience installing complete integrated access control systems similar in material, design, and scope to that indicated for this Project and whose work has resulted in construction with a proven record of successful in-service performance. Qualifications include, but are not necessarily limited, to the following:

1. References: Provide a list of references for similar projects including contact name, phone number, name and type of project.
2. Professional Staffing: Firms to have a dedicated access control systems integration department with full time, experienced professionals on staff experienced in providing on site consulting services for both electrified door hardware and integrated access control systems installations.
3. Factory Training: Installation and service technicians are to be competent factory trained and certified personnel capable of maintaining the system.
4. Service Center: Firms to have a service center capable of providing training, in-stock parts, and emergency maintenance and repairs at the Project site with 24-hour/7-days a week maximum response time.

D. Supplier Qualifications: Supplier/Dealers, verifiably authorized and in good standing with the primary product manufacturers, with experience supplying integrated access control systems similar in material, design, and scope to that indicated for this Project and whose work has resulted in construction with a proven record of successful in-service performance.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article will not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and are in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of the installed access control system hardware and software that fails in materials or workmanship, including all related parts and labor, within specified warranty period after final testing and acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the National Burglar & Fire Alarm Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7**, and that is acceptable to Owner's insurance underwriter**.

E. Testing Agency's Field Supervisor: Person currently certified as an advanced alarm technician by the National Burglar & Fire Alarm Association to supervise on-site testing specified in Part 3.

1.9 MAINTENANCE SERVICE

A. Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (12) months full maintenance by skilled employees of the Systems Integrator. Include repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 OVERVIEW

A. The devices described herein are intended to provide a reference for the Card Access/Security System and are to be provided as described in the Contract Documents.

B. Certain devices described may not be applicable to all systems. All devices required to complete the installation may not be described but shall be provided as if specifically called for within the Specification. It is the responsibility of the Contractor to provide a complete working system.

C. All system components shall be approved for the function they will perform.

D. The system shall be of an open architecture design and shall support industry standard databases such as Microsoft SQL Server 2000/2005, MSDE or SQL Server 2005 Express.

E. A system server for enterprise wide database services, system programming, system monitoring, administrative services, report and proximity card generation.

F. A workstation computer shall provide interfacing and control of the local, site specific, Access/Security System.

G. The System shall be of a distributed database design, using intelligent microprocessor panels, to make smart decisions at the door.

H. The system shall be capable of utilizing a true client server network configured to support the system database service, all panel services and user interfaces optimizing the users' options for system programming, event monitoring and record keeping.

I. The database service shall be ODBC compliant allowing the system to access an existing compatible ODBC compliant database as the system data source. A single system database shall maintain both credential-holder's records as well as access system information and programming parameters.

2.2 MANUFACTURERS

A. Manufacturers subject to compliance with requirements, provide products by the manufacturers specified.

1. Access Control System- DMP Control Systems
2. Card Readers – HID or approved equivalent.
3. Proximity Cards – Cards will be furnished by Owner.
4. Substitutions: Refer to Division 01 Section "Product Requirements".

~~2.3 INSTALLING CONTRACTOR~~

~~A. Procure services from owner's existing maintenance agreement with existing system install company and utilize them for any additions or modifications to the existing system.~~

~~1. Koorsen Fire & Security~~
~~3953 Ralph Jones DR. STE B, South Bend, IN 46628~~
~~(574) 444-9887~~

2.4 ACCESS CONTROL PANEL

A. The access control panel shall be an intelligent, modular controller designed to integrate various event management applications on one controller. ~~The system shall be the System Galaxy 600 Series.~~

B. COMPONENTS

1. Primary Controller: The Primary Controller is the controller responsible for up/downstream communications with the PC/Network. The Primary Controller consists of three major subsystems, software services, hardware and expansion interfaces.

a. Software Services: The software services are a set of common functions and applications that shall be installed on every ~~600 Series~~ Controller to perform system configuration, generic system event handling and communications between the controller and a host or other controllers.

b. Hardware

1) Ethernet Port: The ~~600 Series~~ Controller shall support 10BaseT Ethernet Communication. The interface to the Ethernet services shall be through a standard RJ-45 jack connector native to the controller. Provide as many as required for full system integration.

2) Inputs/outputs: The ~~600 Series~~ controller shall have three (3) on-board inputs. The inputs are reserved for tamper, power fail, and low battery.

3) Serviceable Hot-Swap Modules: The Controller shall allow for "Hot-Swap" serviceability. This allows for communications and door modules to be interchanged without a controller power-down.

4) Power Requirements: Each ~~600 Series~~ Control Module shall accept a regulated input voltage of 11.5VDC to 13.8VDC and generate appropriate voltage levels for on-board use as required. The input supply voltage shall be available to be bussed directly to the reader bus connectors to supply operating voltages for field readers. A jumper shall be provided for the ACP modules supporting direct Wiegand support to supply either 12VDC or 5 VDC to the external read heads.

5) Indicators: There shall be LEDs indicating the status of the received and transmitted data for the onboard communications ports, with active data turning on the LED. These LEDs shall be hardware controlled.

6) Ports: There shall be multiple ports provided on-board for external read heads, input/output boards. The number of actual ports varies according to the controller configuration.

c. Expansion Interfaces

1) Inputs: 8 Supervised Class A inputs shall be provided on each Digital I/O board. These inputs shall report secure for user selectable ohms and alarm for open or short. Resistors marked for easy identification shall be located near each input connector to be clipped out by the end user when installing inputs.

Outputs: 4 Class C relay outputs shall be provided on each Digital I/O board these outputs shall have contacts for Normally Open or Normally Closed states

a) Each ~~600~~ Controller shall support up to five (5) Digital I/O board, adding up to forty (40) supervised inputs and twenty (20) Class C relays.

C. System Enclosure: Sheet metal, of the appropriate gauge for the cabinet size per UL 294, shall be utilized. The cabinet shall be Black in color with a matte finish. The ACP's shall be housed in a locking 18 gauge metal cabinet, suitable for wall mounting. All cabinet locks shall be keyed alike. The cabinet shall be suitably sized to allow installation of the controller and all expansion modules and associated field wiring. The cabinet door shall include illuminated diagnostic indicators, which shall indicate the status of the panel. A single tamper switch shall be incorporated into the door. There shall be at least 4 mounting holes and 10 knockouts on the cabinet. Panel shall be provided with 120 volt power supply along with battery backup and battery charger.

2.5 CARD READERS

A. All readers shall be compatible with Owners 26 bit, HID cards.

B. Readers shall be long range proximity, minimum 8" range, type technology system that complies with UL 294 standards and is certified as complying by Underwriters' Laboratories.

C. Readers shall be single piece indoor/outdoor wall switch proximity reader providing a Wiegand 26 Bit output. Shall mount in a door entry panel electrical box and shall be powered directly from the panel. The reader shall be sealed in a rugged, weatherized enclosure designed to withstand harsh environments as well as provide a high degree of vandal resistance when installed outdoors.

D. Manufacture

1. Wall mount – HID
2. Mullion Mount –HID
3. Vehicle Entrances – HID Maxiprox

E. POWER SUPPLIES

1. Power supplies for mortise and/or strike lock power shall be suitable to provide 24vdc, 4 amp power to Altronix AL-400. Provide one for every eight doors.

F. Key Pad Units.

G. Electric Strikes.

H. Electric Locks.

I. Motion Dectectors.

J. Manual Stations.

K. System Cable.

PART 3 - EXECUTION

3.1 PRE-INSTALL MEETING

A. Prior to commencing installation, the trades shall convene for a coordination meeting including but not limited to the following parties:

1. Architect
2. Electrical Engineer or Systems Designer
3. Construction Manager
4. Frame and Door Installer
5. Door Hardware Installer
6. Electrical and Fire Alarm contractor
7. Low voltage or security systems contractor

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use 16 AWG minimum size conductors for detection and signal circuit conductors. Install wiring in conduit.

C. Make conduit and wiring connections to door hardware devices furnished and installed under Division 08 Section "Door Hardware."

3.3 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Division 01 Section "Quality Control."

3.4 MANUFACTURER'S FIELD SERVICES

A. Include services of technician to supervise installation, adjustments, final connections, system testing, and to train Owner personnel.

3.5 DEMONSTRATION

A. Demonstrate normal and abnormal modes of operation, and required response to each.

B. Provide 4 hours of instruction each for two persons.

1. Conduct instruction at project site with manufacturer's representative.
2. Include travel and living expenses for Owner personnel.