

**2013 Bond Program
Series 1, Bid Package #6**

**Additions & Remodeling at
Boulan Park Middle School & Larson Middle School**

PROJECT MANUAL

Issued: June 16, 2014

Barton
 **Malow**



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PROJECT MANUAL
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- Project Manual issued by Barton Malow Company dated June 16, 2014
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**SECTION 00030
PROJECT MANUAL
INFORMATION AND IDENTITIES**

This Project Manual has been prepared by CM and contains the Bidding and Contract Requirements for **Troy School District – 2013 Bond Program, Series 1, Bid Package 6 Additions & Remodeling at Boulan Park Middle School & Larson Middle School** project in **Troy, MI**

PROJECT: **Troy School District 2013 Bond Program
Series 1, Bid Package 6
Additions & Remodeling at Boulan Park Middle School &
Larson Middle School**

CONSTRUCTION MANAGER: **Barton Malow Company
(Direct all Questions to CM)**
**1140 Rankin Drive
Troy, MI 48083**

**Gerrit Littrup
Phone: 248.417.8952
Fax: 248.436.5569
Email: Gerrit.Littrup@bartonmalow.com**

OWNER: **Troy School District
4400 Livernois
Troy, MI 48098**

ARCHITECT: **TMP Architecture
1191 W. Square Lake Road
Bloomfield Hills, MI 48302**

Phone: (248) 338-4561

**MECHANICAL / ELECTRICAL
CONSULTANT** **Peter Basso Associates
5145 Livernois Road Suite #100
Troy, MI 48098**

**Phone: (248) 879 - 5666
Fax: (248) 879 - 0007**

CIVIL CONSULTANT **Professional Engineering Associates, Inc.
2430 Rochester Ct. Suite 100
Troy, MI 48083**

**Phone: (248) 689 - 9090
Fax: (248) 689 - 1044**

SECTION 00100
Advertisement to Bid

1. Barton Malow Company requests Bid Proposals on behalf of Troy School District for the construction of the Series 1, Bid Package 6 Additions & Remodeling at Boulan Park Middle School & Larson Middle School. Bid Proposals will be received:

1.1. By delivery or mail by 2:00 p.m. local time on July 10, 2014.

1.2. To the attention of:

Kenneth Miller
Troy School District Administration Office
4400 Livernois Rd
Troy, MI, 48098

2. Proposals must be sealed with Bidder's name on the outside of the envelope and designated as follows:

Sealed Proposal

Series 1, Bid Package 6 Additions & Remodeling at Boulan Park Middle School
& Larson Middle School

Bid Category: _____

Contractor Name, Address, Phone Number

3. Proposals shall be based on the requirements set forth in the Bidding Documents:

Bid Category 033000 Concrete
Bid Category 042000 Masonry
Bid Category 051000 Metal
Bid Category 061000 General Trades
Bid Category 230000 Mechanical
Bid Category 260000 Electrical
Bid Category 320000 Sitework

4. Accepted Bidders will be required, as a condition precedent to award of Contract, to furnish, satisfactory Performance Bond and Payment Bond and Certificates of Insurance as required in the Project Manual
5. Unless otherwise specifically set forth, this Project is subject to state sales and/or use taxes and Bidder is required to include such taxes in its Bid Proposal.
6. Barton Malow Company has been contracted by the Owner in the capacity of CM for the Project, and shall act as representative of the Owner to the extent required/allowed under its Owner contract. Hereafter Barton Malow Company shall be referred to as the "CM".
7. Bid Proposals will be publicly opened by Troy School District, evaluated by CM, Owner and the Architect, with recommended awards subsequently made by Barton Malow Company. ***The Owner shall not open, consider, or accept a Bid Proposal that is received after the date and time specified for bid submission in this Advertisement for Bids.***
8. Bidding Documents will be available for examination and distribution on or after June 16, 2014. Examination may be made at CM's Office (1400 Rankin Drive – Troy, MI 48083).
9. No Pre-bid conference will be held. Contractors can contact Gerrit.Littrup@bartonmalow.com if they wish to do a site visit.
10. Electronic documents are free of charge and are made available by emailing: Gerrit.Littrup@bartonmalow.com. There will be a \$25 fee (check payable to Barton Malow Company) for paper documents which will be available for distribution at Arc Document Solutions at 1009 W. Maple Rd, Clawson, MI. Bidder shall provide their shipper number for shipping fees if the bidder desires to have plans

sent by ground or air transportation. More than one set is available upon payment of printing and shipping costs.

11. Bid Proposals shall be on forms furnished by CM. Bidders will be required to submit with their Bid Proposals a Bid Security by a qualified surety authorized to do business in the state where the Project is located. Bidders shall not withdraw Bid Proposals for a period of 90Days after date for receipt of Bid Proposals.
12. The successful Bidder(s) will be required to enter into an agreement with **Troy School District** on the Agreement Form identified in the Project Manual.
13. All Bid Proposals shall be accompanied by the following two forms found in Section 00410: Familial Disclosure Form (in accordance with MCL 380.1267) and an Iran Economic Sanctions Act Form (in compliance with Michigan Public Act No. 517 of 2012. Bid Proposals that do not include these two sworn and notarized forms shall not be accepted.

Barton Malow Company
Gerrit Littrup
Project Manager/Engineer

END OF SECTION 00100

SECTION 00200 INSTRUCTION TO BIDDERS

1. DEFINITIONS

- 1.1. Capitalized terms used in this Project Manual shall have the meanings set forth below. If a capitalized term is used herein but not defined in this Section, 00200, Part 1, it shall have the meaning set forth in the Contract Documents.
- 1.2. **“Addenda”** means the written and graphic instruments issued by the Architect and/or CM prior to the execution of the Agreement that modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.
- 1.3. **“Agreement”** means the document defined in the Project Manual, including all other documents incorporated by reference in the Agreement.
- 1.4. **“An Alternate Bid”** (or **“Alternate”**) is an amount stated in the Bid Proposal to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
- 1.5. **“Architect”** means the person or entity listed in section 00030 of the Project Manual and may include professional engineers if so designated.
- 1.6. **“Base Bid”** is the sum stated in the Bid Proposal for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added to or deducted from for sums stated in Alternate Bids.
- 1.7. A **“Bidder”** is a person or legal entity that submits a Bid Proposal in conformance with the Bidding Documents. After award of the Agreement, the Bidder will be referred to as Contractor. All Contractors on this project are considered prime/principal contractors.
- 1.8. **“Bid Categories”** are units of Work performed by a Contractor and its Subordinate Parties which form part of the total Project. The term **“Bid Category”** should not be confused with the term **“Technical Section”**. Technical Sections of the Specification establish quality and performance criteria, and the Bid Categories designate work scope and assignment.
- 1.9. **“Bidding Documents”** means the Bidding Requirements, the Contract Documents, and the Reference Documents collectively.
- 1.10. A **“Bid Package”** means a series of Bid Categories that are released for bidding in the same set of Bidding Documents.
- 1.11. **“Bidding Requirements”** include the Advertisement to Bid, Instructions to Bidders, Information Available to Bidders, and Bid forms and supplements.
- 1.12. **“Bid Proposal”** is a complete and properly signed proposal to do the Work of an individual Bid Category(ies) for the sums stipulated therein, submitted in accordance with the Bidding Documents.
- 1.13. The **“Contract Documents”** consist of all Contracting Requirements set forth in the Project Manual, including, but not limited to, the Contract Forms (the Agreement, Performance/Payment Bonds, and Certificates), the Conditions of the Contract (General, Supplementary or Special), the General Requirements of the Project Manual, the Technical Specifications, Drawings, and all other documents incorporated into the Agreement by reference, all Addenda issued prior to and all modifications issued after execution of the Agreement.
- 1.14. **“Contractor”** means the entity to which the Owner issues a contract for performance of the Work.
- 1.15. **“Day”** means calendar day, unless otherwise defined in the particular Contract Document.
- 1.16. **“Hazard Communications Program”** means Contractor’s own hazard communications program that will govern project safety for its Work. The Hazard Communications Program must be submitted to CM by each successful Bidder before commencing Work and be no less stringent than Section 00810 - On Site Safety and Loss Control Program.

- 1.17. **“Hazardous Materials”** means asbestos; asbestos containing material; lead (including lead-based paint); PCB; molds; any other chemical, material, or substance subject to regulation as a hazardous material, hazardous substance, toxic substance, or otherwise, under applicable federal, state, or local law; and any other chemical, material, or substance that may have adverse effects on human health or the environment.
- 1.18. **“Lowest Responsive, Responsible Bidder”** means a Bidder who’s Bid Proposal conforms in all material aspects to the terms, conditions, specifications and requirements of the solicitations and who has demonstrated the ability to properly perform the Work.
- 1.19. **“MBE/WBE/SBE”** means Minority Owned Business Enterprise/Women Owned Business Enterprise/ Small Business Enterprise as these terms are defined in the applicable ordinances and laws governing the Project.
- 1.20. **“Project Safety Program”** means the Contractor’s site safety program that will govern project safety for its Work. The Project Safety Program must be submitted to CM by each successful Bidder before commencing Work and be no less stringent than Section 00810 - On Site Safety and Loss Control Program.
- 1.21. **“Reference Documents”** are drawings that do not form a part of the Contract Documents and are included in the Bidding Documents as a courtesy only. The Bidder is not entitled to rely upon the accuracy of the Resource Drawings and they are not warranted to be correct or reliable by the Owner or CM. The Bidder is expected to have conducted its own investigation into the reliability or accuracy of any Reference Documents, and no adjustment to the Base Bid shall be made if such request arises or results from the Bidder’s failure to conduct such investigation.
- 1.22. **“Subordinate Parties”** means all of Contractor’s employees, workers, laborers, agents, consultants, suppliers or subcontractors, at any tier, who perform, assist with, or otherwise are involved in any of the Work.
- 1.23. A **“Unit Price”** is an amount stated in the Bid Proposal as a price per unit of measurement for materials or services as described in the Bidding Documents or in the proposed Contract Documents.
- 1.24. The **“Work”** includes all work and responsibilities performed or to be performed by Contractor under the Subcontract.

2. PART 2 - BIDDERS REPRESENTATIONS

- 2.1.1. The Owner reserves the right to request qualification forms or additional information from any Bidder before issuing documents, receiving Bid Proposals or awarding an Agreement. The Owner may, at their sole discretion, accept or reject Bidders as qualified. The right to waive any informalities or irregularities in qualification materials is reserved by the Owner.

2.2. BIDDER BY MAKING ITS BID REPRESENTS THAT:

- 2.2.1. Bidder has carefully read, reviewed and understands the Bidding Documents and its Bid Proposal is made in accordance therewith.
- 2.2.2. Bidder’s Bid Proposal is based upon the materials, systems, equipment, terms and conditions required by the Bidding Documents without exception.
- 2.2.3. Bidder certifies that it:
 - 2.2.3.1. has examined the Project site;
 - 2.2.3.2. has carefully reviewed the Bidding Documents
 - 2.2.3.3. has compared its examination of the Project site with the Bidding Documents;
 - 2.2.3.4. is satisfied as to the condition of the Project site, any surface or subsurface obstruction, the actual levels, and all excavating, filling in, removal and demolition, measurements and quantities involved in the Work;
 - 2.2.3.5. is familiar with weather conditions of the Project area;
 - 2.2.3.6. has taken account of all of these factors in preparing and presenting its Bid Proposal.

- 2.2.4. Bidder further certifies that it
 - 2.2.4.1. has fully acquainted itself with the character and extent of the Owner's, CM's and other Contractor 's operations in the area of the Work
 - 2.2.4.2. has taken account of coordination of operations of others in its construction plans set forth in the Bid Proposal.
- 2.2.5. No change orders will be issued to the Contractor for or on account of costs or expenses occasioned by its failure to comply with the provisions of this paragraph, or by reason of error or oversight on the part of the Contractor, or on account of interferences by the Owner's, CM's or other contractor's activities.
- 2.2.6. The Bidder, by submitting its Bid Proposal, represents that it has carefully reviewed the project schedule, along with the related requirements of the Project's Schedule and Phasing, and acknowledges that these are acceptable and have been taken into account in preparing its Bid Proposal.

3. BIDDING DOCUMENTS

3.1. COPIES

- 3.1.1. Bidders shall use complete sets of Bidding Documents in preparing Bid Proposals. Neither the Owner, CM nor the Architect shall be responsible for errors, omissions or misinterpretations resulting from the Bidder's use of partial sets of Bidding Documents.
- 3.1.2. Copies of the Bidding Documents are being made available for the purpose of obtaining Bid Proposals for the Work only. Bidders shall not use the Bidding Documents for any other purpose. Neither the Owner, CM nor the Architect warrants the completeness and/or adequacy of the Bidding Documents.

3.2. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

- 3.2.1. Bidder shall promptly notify the Barton Malow Company of all ambiguities, inconsistencies, or errors that it may discover upon examination of the Bidding Documents or upon examination of the Project site and local conditions. Bidders requesting clarification or interpretation of the Bidding Documents shall make a written request, which shall reach Barton Malow Company at least 5 days prior to the date for receipt of Bid Proposals. Direct all questions to:

Contact Name: Gerrit Littrup
Address: 1140 Rankin Dr.
City, State, Zip: Troy, MI, 48098
Phone: 248.417.8952
Fax: 248.436.5569
Email: Gerrit.Littrup@bartonmalow.com

- 3.2.2. Any interpretation, correction, or change of the Bidding Documents will be made by Addendum and/or Bid Clarification. Interpretations, corrections, or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes. Advertisement to Bid

3.3. ADDENDA and/or BID CLARIFICATIONS

- 3.3.1. Addenda and/or Bid Clarifications will be distributed to all who are known by CM to have received a complete set of Bidding Documents. Copies of Addenda and/or Bid Clarifications will be made available for inspection wherever Bidding Documents are on file for that purpose.
- 3.3.2. No Addenda or Bid Clarifications will be issued later than 3 days prior to the date for receipt of Bids except an Addendum or Bid Clarification withdrawing or postponing the request for Bid Proposals.

3.4. ALTERNATES

- 3.4.1. Each Bidder must bid on all Alternates listed in the Bid Proposal that are applicable to its Bid Category. Alternates will be fully considered in awarding the Agreement.
- 3.4.2. The Owner shall be allowed a period of 90 Days after date of receipt of the Bid Proposals to exercise the right to accept or reject any or all Alternates submitted on the Bid Proposal.
- 3.4.3. Successful Bidders shall perform all Work required for complete execution of accepted Alternates, and the Bid Proposal shall include all overhead and profit for the Work required.

3.5. VOLUNTARY ALTERNATES

- 3.5.1. All Bid Proposals must be based upon the Bidding Documents. In addition to a Base Bid Proposal, the submission of Voluntary Alternates is acceptable and encouraged. If a Voluntary Alternate is submitted for consideration, it shall be expressed on the Bid Form as an add or deduct amount from the Base Bid. The [Owner or Owner and CM] reserve the right to unilaterally accept or reject Voluntary Alternates and to determine if the Voluntary Alternates will be considered in the awarding of the Agreement.

3.6. UNIT PRICES

- 3.6.1. Each Bidder must bid on all Unit Prices listed in the Bid Proposal that are applicable to its Bid Category. Unit Prices will be fully considered in awarding the Agreement.
- 3.6.2. Successful Bidders shall perform all Work required for complete execution of accepted Unit Prices, and such Unit Prices shall include all overhead and profit for the Work required.

3.7. NO DISCRIMINATION

- 3.7.1. All Bidders shall ensure that employees and applicants for employment are not discriminated against because of their race, color, religion, sex, national origin, age, marital status, sexual orientation, or disability and in conformance with local, state and federal laws, regulations and ordinances.
- 3.7.2. In regard to any Agreement entered into pursuant to this Bid Package, minority and women owned business enterprises will be afforded full opportunity to submit Bid Proposals and will not be discriminated against on the grounds of race, color, religion, sex, national origin, age, marital status, sexual orientation, disability or any other status protected by applicable law.

4. BIDDING PROCEDURE

4.1. FORM AND STYLE OF BIDS

- 4.1.1. Bid Proposals shall be submitted in accordance with the Bid Proposal Form.

4.2. BID SECURITY

- 4.2.1. Bid security in the form of a bid bond issued by a qualified surety, certified check or cashier's check in the amount of five percent (5%) of the Base Bid amount will be required at the time of submission of the Bid Proposal. Bid bonds shall be duly executed by the Bidder, as principal and by a surety that is properly licensed and authorized to do business in the state in which the Work is to be performed. All sureties providing bonds for this Project must be listed in the latest version of the Department of Treasury's Circular 570, entitled "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies", with the bond amount less than or equal to the underwriting limitation, and/or have an A.M. best rating of A- or better.
- 4.2.2. Bid bond shall pledge that the Bidder, with the understanding that if its Bid Proposal is accepted, will enter into the Agreement with the Troy School District for any of the Bid Category(ies) accepted from its Bid Proposal and will, if required, furnish performance and payment bonds covering the faithful performance of the Agreement and the payment of all obligations arising there under. The attorney-in-fact, who signs the surety bond must submit along with the bond, a certified and effectively dated copy of his/her power of attorney.

- 4.2.3. Bid bond form AIA Document A310 unmodified, is approved for use on this Project.
- 4.2.4. The bid security obligees shall be Troy School District and the amount of the bid security shall become their property in the event that the Bidder fails, within fifteen (15) days of notice of award or receipt of the Agreement form, to execute the Agreement, and deliver the performance and payment bonds as described in the Project Manual, section 00500. In such case, the bid security shall be forfeited to the Troy School District as liquidated damages, not as a penalty.
- 4.2.5. The Owner will have the right to retain the bid security(ies) of Bidders to whom an award is being considered until either (a) the Agreement has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bid Proposals may be withdrawn, or (c) all Bid Proposals have been rejected.
- 4.2.6. Bid security will be returned to the successful Bidders after the Agreement has been executed, and acceptance of required performance and payment bonds. The bid security of Bidders that are not under consideration for award of the Agreement will be returned to those Bidders.

4.3. SUBMISSION OF BIDS

- 4.3.1. All copies of the Bid Proposal, the bid security and any other documents required to be submitted with the Bid Proposal shall be enclosed in a sealed opaque envelope. The envelope shall be labeled as specified as noted in Section 00100.
- 4.3.2. Bid Proposals shall be deposited at the designated location prior to the time and date for receipt of Bid Proposals indicated in the Advertisement to Bid, or any extension thereof made by Addendum or Bid Clarification. Bid Proposals received after the date and time for receipt of bids may be returned unopened.

4.4. MODIFICATION OR WITHDRAWAL OF BID PROPOSAL

- 4.4.1. A Bid Proposal may not be modified, withdrawn or canceled by the Bidder after the stipulated time period and date designated for the receipt of Bid Proposals, and each Bidder so agrees in submitting its Bid.
- 4.4.2. Prior to the time and date designated for receipt of Bid Proposals, any Bid Proposal submitted may be modified or withdrawn by notice to the party receiving Bid Proposals at the place designated for their receipt. Such notice shall be in writing over the signature of the Bidder.
- 4.4.3. Withdrawn Bid Proposals may be resubmitted up to the time designated for the receipt of bids provided that they are then fully in conformance with these Instructions to Bidders.
- 4.4.4. Bid security as stated above shall be in an amount for the Base Bid as modified or resubmitted.

5. CONSIDERATION OF BIDS

5.1. OPENING OF BIDS

- 5.1.1. Bid Proposals received on time will be opened publicly.
- 5.1.2. Bid Proposals shall be held open and irrevocable for ninety (90)Days after the date for receipt of bids.

5.2. REJECTION OF BIDS

- 5.2.1. The Troy School District reserves the right to reject any or all Bid Proposals in accordance with all applicable laws.

5.3. ACCEPTANCE OF BID (AWARD)

- 5.3.1. It is the intent of the Troy School District to award the Agreement to the Lowest Responsive and Responsible Bidder in accordance with the Bidding Documents. The Troy School District shall have the right to waive any informality or irregularity in any Bid Proposal received and to accept Bid Proposals which, in its judgment, are in its own best interest.

- 5.3.2. The Troy School District shall have the right to accept Alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid, Voluntary Alternates, and Alternates accepted.
- 5.4. To the extent that these Instructions to Bidders and applicable public bidding laws, rules, regulations or ordinances conflict with each other, the provisions of the applicable bidding laws, rules, regulations or ordinances shall govern.
- 5.5. The Owner expects all supplies, materials, equipment or products proposed by a Bidder to meet or exceed the Specifications set forth in the Bidding Documents. Further, it is the Owner's intent that the Bidding Documents permit competition. Accordingly, the use of any patent, proprietary name or manufacturer's name is for demonstrative purposes only and is not intended to curtail competition. Whenever any supplies, material, equipment or products requested in the Bidding Documents are specified by patent, proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words "or comparable equivalent," whether or not such words appear. The Owner, in its sole and absolute discretion, shall have the right to determine if the proposed equivalent products/brands submitted by Bidder meet the Specifications contained in the Bidding Documents and possess equivalent and/or better qualities. It shall be the Bidder's responsibility to notify the Owner in writing if any Specifications or suggested comparable equivalent products/brands require clarification by the Owner prior to the Due Date for Bid Proposals.

6. POST BID INFORMATION

6.1. POST BID INFORMATION

- 6.1.1. After the Bids are received, tabulated, and evaluated, the apparent low Bidders when so requested shall meet with CM at a post-bid meeting for the purposes of determining completeness of scope and any contract overlaps or omissions. If requested, the Bidder shall submit additional information as requested by CM. The Bidder will provide the following information at the post-bid meeting:
- 6.1.1.1. Designation of the Work to be performed by the Bidder with its own forces including manpower for the Contractor and that of its Subordinate Parties.
 - 6.1.1.2. Detailed cost breakdown of the Bidder's Bid Proposal including labor, equipment and material unit prices.
 - 6.1.1.3. A list of names of the Subordinate Parties proposed for the principal portions of the Work.
 - 6.1.1.4. The proprietary names and suppliers of principal items or systems of materials and equipment proposed for the Work.
 - 6.1.1.5. The names and backgrounds of the Bidder's key staff members including foremen and assistants. Bidder shall be requested to establish the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.
 - 6.1.1.6. Commitment to construction schedules, identification of items requiring long lead deliveries and manpower information in accordance with Section 00230 of the Project Manual.
 - 6.1.1.7. Signed safety program compliance, as described in the Contract Documents
- 6.1.2. Prior to award of the Agreement, CM will notify the Bidder if either the Owner, the Architect, or CM, after due investigation, has reasonable objection to any proposed Subordinate Party. If the Owner, Architect or CM has reasonable objection to any proposed Subordinate Party, the Bidder may, at its option: (1) withdraw its Bid Proposal; or (2) submit an acceptable substitute Subordinate Party with an adjustment in its bid amount to cover the difference in cost occasioned by such substitution. The Troy School District, may, at its discretion, accept the adjusted bid amount or it may disqualify the Bidder. In the event of either withdrawal or

disqualification under this Subparagraph, bid security will not be forfeited, notwithstanding the terms in the Instructions to Bidders.

- 6.1.3. Upon the Award of the Agreement, the Contractor shall submit to CM a complete list of all items, products, and layouts for which shop drawings, brochures, or samples are required; name of each Subordinate Party; and date of planned submission.
- 6.1.4. The Bidder will be required to establish to the satisfaction of CM, Owner and Architect, the reliability and responsibility of the Subordinate Parties proposed to furnish and perform the Work described in the Bidding Documents.

END OF SECTION 00200

SECTION 00210
DESCRIPTION OF THE WORK/SPECIAL PROVISIONS

1. GENERAL

1.1. RELATED DOCUMENTS

- 1.1.1. All Bidders shall review all of the Bidding Documents, all Bid Category Work descriptions and all Contract Documents, immediately advise CM of any adverse factors, conflicts or ambiguities that might affect the execution of Work of this Bid Package. Each Bidder is responsible to review all Bid Category descriptions and Contract Documents and coordinate the Work accordingly. Each Bidder shall incorporate into its Bid Proposal the cost of coordination of the Work with the requirements of all related Contract Documents, as shown, specified, or required.
- 1.1.2. Each Bidder shall thoroughly examine all of the Bidding Documents for the Work of all trades so as to familiarize itself both with the Work required under its Bid Category(ies) and with Work required under all other Bid Categories.
- 1.1.3. The Bidder shall perform all Work reasonably inferable from the Bidding Documents to produce the intended results. Bidders are required to visit and examine the Project site and may arrange the visit through CM.
- 1.1.4. A complete set of bid documents are available at CM's office

1.2. PROJECT DESCRIPTION

- 1.2.1. The Project is located at Boulton Park Middle School and Larson Middle School. The scope of the project is two ~6100sf additions, one at each school.

1.3. SUMMARY OF THE BID CATEGORIES/WORK SCOPES

- 1.3.1. The following is a listing of Bid Categories for Bid Package 6. All work relative to the Bid Package is identified on plans and specifications as prepared by the Architect. Each Bid Category description identifies the scope of Work to be performed by the Bidder as designated by CM.

BID CATEGORIES

Bid Category 033000 Concrete
Bid Category 042000 Masonry
Bid Category 051000 Metal
Bid Category 061000 General Trades
Bid Category 230000 Mechanical
Bid Category 260000 Electrical
Bid Category 320000 Sitework

Specific Bid Category/Work Scope descriptions are found in Section 00220.

1.4. SPECIAL PROVISIONS

- 1.4.1. The following special provisions form a part of each Bid Category Work Scope and apply to each Contractor's Scope of Work found in Section 00220.
- 1.4.2. The Bid Category/Work Scopes should in no way be construed as being all inclusive. The Work Scope is issued as a guide to aid in the assignment of Work. If conflict regarding assignment of Work exists between the drawing notes and these descriptions, the Description of the Work and Bid Category/Work Scopes will take precedence. The Contractor shall carefully review and compare the Drawings and Specifications with the Work Scopes, and if a conflict exists, the Contractor shall immediately notify CM in writing. The Bid Category numbers and the specification section numbers are not, in all cases, identical.
- 1.4.3. Bidders are required to bid the entire Bid Category. Bids will only be accepted for individual Bid Categories. A Bidder may bid more than one Bid Category. Combined bids covering several Bid Categories will not be accepted, unless separate bid amounts are listed for each Bid

Category making up the combined bid amount. Review the “Instructions to Bidders” in Section 00200 for specific Bid Proposal instructions.

- 1.4.4. Each Bidder shall review the schedule enclosed in the Bidding Documents, and be prepared to review at the post-bid meetings a schedule for the engineering, fabrication, delivery and installation of its Work. . This information will be considered in the award recommendation.
- 1.4.5. All Contractor’s are to coordinate all Work with the work of other trades for proper function and sequence (see Section 01360). Contractor must furnish approved copies of shop drawings, mock-ups, and technical data to other contractors designated by the CM for the purposes of coordination of this Work. Contractor must provide to all other trades all information (drawings, diagrams, templates, embedments) and other related Work necessary for the proper coordination of the Work of all trades. Each phase of the Work shall be coordinated, and the coordination plan approved by CM prior to proceeding. Contractor shall keep informed as to Work of all trades engaged in the Project, and shall execute Work in such a manner as not to delay or interfere with the progress of other trades involved. Contractor is required to schedule its Work so that no other party is delayed in execution of its work. Contractor is required to employ competent supervision on the Project throughout the entire period of construction to ensure proper coordination.
- 1.4.6. Contractor will furnish before any Work is started, evidence of ISO Certification or documented procedures for process control, including drawings, submittals, inspection/surveillance and training. In lieu of defined procedures, Contractor will follow CM’s documented procedures for process control.
- 1.4.7. When it is necessary to modify or tie into existing utility services, Contractor shall notify CM in writing a minimum of 48 hours prior to the planned disruption. All disruptions shall be scheduled with CM and shall be kept to a minimum time. Tie-ins and shutdowns of existing utilities may have to be performed during off hours. Contractor’s are to include any required premium time in the Base Bid.
- 1.4.8. If Owner will occupy the premises or a portion of the premises during the construction, Contractor shall cooperate with CM and Owner in all construction operations to minimize conflict, and to facilitate Owner occupancy.
- 1.4.9. Information pertaining to the existing building has been obtained through photographs and investigations and is indicated on the Resource Drawings. This information is not warranted to be complete or accurate. Contractor shall verify all dimensions in the field prior to ordering materials or construction and any costs or expenses arising out of its failure to do so shall be borne solely by Contractor.
- 1.4.10. The Contractor shall examine the existing site conditions and carefully compare them to the Drawings. All measurements must be verified from actual observation at the Project site. The Contractor is responsible for all Work fitting in place in approved, satisfactory and workmanlike manner in every particular. If the Contractor encounters unexpected existing site or building conditions, it shall cease operations immediately to minimize damage and shall immediately notify CM in writing. Contractor shall bear all costs, expenses or damages arising or resulting from its failure to comply with this paragraph.
- 1.4.11. Hoisting of material or equipment above occupied areas will NOT be permitted unless the existing structure has been properly verified by a licensed professional Engineer to be able to bear the load of the material or equipment being hoisted if accidentally released. It is the responsibility of the Contractor performing such hoisting to properly and adequately reinforce existing structure.
- 1.4.12. Space for electrical and mechanical lines is limited for the Project. Therefore, it is imperative that Contractor coordinate its Work with the Work of all other trades to ensure containment of electrical and mechanical lines in space provided. Priority of space will be decided in discretion of CM, with no additional compensation, where unresolved conflict exists. If Work is not

properly coordinated, Contractor shall remove and relocate Work without additional compensation.

- 1.4.13. The Contractor shall maintain all project record documents for all concealed Work to mark actual construction. The Contractor shall turned over to CM all project record documents upon completion of Work by the Contractor, in a format to be determined by CM. The Contractor shall make all project record documents available to the Owner, CM and/or the Architect for inspection and review. The Contractor's failure to maintain such documents adequately shall entitle the Owner and/or CM to withhold payment until such documents are current and up to date.
- 1.4.14. The Contractor shall submit a daily report to CM on a daily basis on the form provided to Contractor by CM.
- 1.4.15. All Contractor shall attend all meetings as required by CM.

1.5. OWNER EQUIPMENT COORDINATION

- 1.5.1. The Owner Furnished and Contractor Installed (OF/CI) equipment as listed in the Individual Contractor's Work scopes found in Section 00220 shows the Contractor responsible to schedule delivery, receive the equipment and accessories F.O.B. jobsite, inspect, protect, store, handle and move into position, provide all coordination with applicable trades for rough-in requirements and final connections, marshal the appropriate trades as a composite installation crew, and assist in initial startup.
- 1.5.2. Refer to the Drawings to determine quantities.

END OF SECTION 00210

SECTION 00220 WORK SCOPES

BID CATEGORY 033000 - Concrete

In addition to the above, this Bid Category requires adherence to and coordination with various other technical Specifications interfacing with this Work. The Bidder shall review the Work descriptions of the other Bid Categories as set forth in Section 00210 of the Project Manual and other referenced documents so as to not misunderstand scope responsibilities.

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
033000	Cast In Place Concrete
072100	Building Insulation
078413	Firestopping
078446	Firestop Joint Systems
079200	Joint Sealants

In addition to the above, this bid category includes but is not limited to the Bidding Documents, the Bidding and Contract requirements and Division 1 General Requirements of the Project Manual and various other Technical Specifications interfacing with this work. The bidder is advised to review the work descriptions of the other categories and other referenced documents so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. This contractor shall be responsible for layout, engineering, and ongoing clean up as it pertains to this work, coordinate layout with other contractors.
2. This contractor will be responsible for all re-mobilization costs for all phases of work.
3. This contractor shall obtain and pay for all permits required for the work described by this bid category.
4. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
5. This contractor shall be responsible for receiving, off-loading, and hoisting into/onto the building. This includes the safe and secure storage of materials related to this work.
6. This contractor will be responsible for all de-watering during excavations of their work.
7. Contractor is responsible to tie in all new work related to this bid category with the existing building. This includes all rework of existing conditions to the satisfaction of the Construction Manager, Architect and Owner. Contractor is to perform all demolition to complete their own work, as required.

8. Furnish and install all reinforcing steel and steel mesh in concrete.
9. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.
10. Provide daily clean-up according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction manager will provide a laborer to complete the clean-up and the appropriate contractor will be back charged.
11. All demolition work is assigned to the individual contractors that are responsible for the particular material or work in question. The contractor is to perform all demolition of the materials assigned in the specification sections listed in their own Description of work, unless otherwise noted
12. Contractor is responsible for all insulation associated with concrete slabs.
13. Receive, sign for, unload, store and install miscellaneous metal fabrications embedded in concrete furnished by others, to include anchor bolts and sleeves.
14. Provide 48-hour notice to construction manager prior to placement of concrete to allow for Owner's testing consultant to be scheduled.
15. Each contractor performing demolition shall be responsible for protecting new and existing construction from damage due to their work. If any adjacent surfaces are damaged it will be the sole responsibility of the contractor at fault to completely repair and replace all damaged construction to the satisfaction of the Owner, Construction Manager and Architect.
16. Cleaning of roadways as directed by the Construction Manager due to activities by this contractor. Include site dust control due to the activities being performed by this Bid Category. Maintain site grade during the scope of this Contractor's work. Maintain ruts to facilitate site accessibility.
17. Coordinate all required inspections by local or state for this scope of work.
18. Furnish, install and maintain temporary barricades, handrails, caution tape and signage for foundation elevation and grade changes per all local, state and federal authorities having jurisdiction.
19. Furnish, install and maintain reinforcement steel/dowel safety caps per MIOSHA standards.
20. This contractor shall be responsible to furnish and install all sleeves for all work by other trades that pass through the foundations. Coordination with other trades is required.
21. Furnish and install all base materials shown or specified as required for work of this category.
22. Furnish and install all vapor barriers/retarders, waterstops and sheet waterproofing as it pertains to concrete flatwork, include under slab drainage, piping and fill as required.
23. Furnish and place all necessary dust control as required by this work.
24. Coordinate with all electrical, mechanical and plumbing trades during installation of in slab or under slab rough-ins.
25. Furnish and install expansion joint materials and control joints as shown or specified. Sawcutting of control joints must meet industry standards. Dependent on weather conditions, typical standards dictate sawcutting be done within/less than 24 hours. It shall be the responsibility of this contractor to repair any adverse effects to the slab as a result of sawcutting.
26. Include all formwork necessary and pour stops required for concrete flatwork.

27. Contractor shall be responsible for all staking necessary to complete their own work. Contact MISSDIG prior to any work which may conflict with existing underground utilities.
28. Contractor shall provide and install all footings as required to complete their own work. Coordination with other trades, staking and verification of all existing utility locations required prior to starting footing work.
29. Furnish and place concrete sealers, curing and hardener compounds as shown or specified. Note: concrete must be sealed in a timely manner to avoid staining and discoloration due to other construction activities.
30. Provide, place and maintain all hot and/or cold weather protection for concrete as weather conditions dictate.
31. It is the responsibility of this bid category contractor to review all drawing notes including mechanical and electrical drawings for areas requiring work described by this bid category and include same in bid. Penetrations through slab shall be coordinated with mechanical and electrical trades.
32. Include all slab depressions/thickened slabs as shown or specified as required for equipment or floor finishes. This contractor is responsible for grinding and/or patching to obtain the dimensions shown or specified.
33. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with Owner operations. If certain construction activities are anticipated to cause disruption with owners' operations (noise, etc.), these activities shall be coordinated with the owner or scheduled on weekends/after hours.

EXCLUDED FROM THIS CONTRACTOR'S WORK is:

1. All exterior sitework concrete (curbs, sidewalks, etc.)

SPECIAL CONSIDERATIONS:

1. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
2. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
3. Provide clean-up as outlined in the general requirements section 01550.
4. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
5. It is the responsibility of the contractor to review all drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
6. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
7. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
8. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment

Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person. This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 033000 – Concrete

SECTION 00220 WORK SCOPES

BID CATEGORY 042000 - Masonry

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all in accordance with the Contract Documents and applicable codes. All Work is to be performed as shown on the plans and specified in the following Technical Specification sections:

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
042000	Unit Masonry Assemblies
072100	Building Insulation
076200	Sheet Metal Flashing and Trim
078413	Firestopping
078446	Firestop Joint Systems
079200	Joint Sealants

In addition to the above, this Bid Category requires adherence to and coordination with various other technical Specifications interfacing with this Work. The Bidder shall review the Work descriptions of the other Bid Categories as set forth in Section 00210 of the Project Manual and other referenced documents, so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. This contractor shall be responsible for layout, engineering, and ongoing clean up as it pertains to this work, coordinate layout with other contractors.
2. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.
3. Contractor to provide all wall bracing as required to complete their own work. All wall bracing shall comply with OSHA, MIOSHA and any other authorities having jurisdiction.
4. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
5. This contractor will be responsible for all re-mobilization costs for all phases of work.
6. Contractor is responsible to verify all interior and exterior door dimensions within masonry to ensure proper fit. Masonry contractor is responsible to set and install all door frames within masonry. Door frames shall be provided by the general trades contractor, bid category 061000.
7. This contractor shall obtain and pay for all permits required for the work described by this bid category.

8. This contractor shall be responsible for receiving, off-loading, and hoisting into/onto the building. This includes the safe and secure storage of materials related to this work
9. Contractor is responsible to tie in all new work related to this bid category with the existing building. This includes all rework of existing conditions to the satisfaction of the Construction Manager, Architect and Owner. Contractor is to perform all demolition to complete their own work, as required.
10. Coordinate with other trades, including mandatory participation in job meetings.
11. Furnish and install sleeves in all walls related to this bid category.
12. Provide daily clean-up according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction manager will provide a laborer to complete the clean-up and the appropriate contractor will be back charged.
13. All demolition work is assigned to the individual contractors that are responsible for the particular material or work in question. The contractor is to perform all demolition of the materials assigned in the specification sections listed in their own Description of work, unless otherwise noted.
14. This contractor shall obtain and pay for all permits required for the work described by this bid category.
15. Furnish and install all exterior concrete masonry units, above and below grade, face brick, pre-cast lintels, bond beams, masonry lintels, damp proofing, waterproofing, water repellants, insulation, compressible fillers, backer rod, anchors, ties, anchor bolts (grouted in masonry), reinforcing, through-wall flashing and drip edges, building paper, weep holes, pre-molded expansion strip, joint materials, caulking and sealants and other accessories shown or required for a complete product. This includes all metal break trim below existing window frames.
16. Furnish and install loose steel lintels, shelf angles, relieving angles or angles shown in, on or around masonry work.
17. Cleaning of roadways as directed by the Construction Manager due to activities by this contractor. Include site dust control due to the activities being performed by this Bid Category. Maintain site grade during the scope of this Contractor's work. Maintain ruts to facilitate site accessibility.
18. This contractor is responsible for all masonry cleaning and sealing. Provide all cleaning and scraping of new or renovated masonry walls to receive paint.
19. Infill/Patch masonry at all locations designated on plans.
20. This contractor shall examine all drawings (structural, architectural, mechanical and electrical, etc.) for work related to this category for openings requiring the installation of structural steel support. This includes coordinating with all trades. Masonry contractor to infill around all mechanical and electrical penetrations.
21. Contractor is to caulk and seal all exterior control joints, expansion joints and dissimilar materials adjacent to masonry, as required include backer rod as required or specified.
22. Each contractor performing demolition shall be responsible for protecting new and existing construction from damage due to their work. If any adjacent surfaces are damaged it will be the sole responsibility of the contractor at fault to completely repair and replace all damaged construction to the satisfaction of the Owner, Construction Manager and Architect.
23. This contractor shall cut all masonry openings and tooth-in new masonry for new window, door openings and louvers in existing/new walls as required. Cut/channel and patch walls as shown for in wall electrical and mechanical or plumbing.
24. This Contractor shall review door head and jamb details, and include work shown under this scope of work.
25. Masonry contractor is responsible for the removal and reinstallation of the existing coping or replacement if necessary.
26. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with Owner operations. If certain construction activities are anticipated to cause disruption with owners' operations (noise, etc.), these activities shall be coordinated with the owner or scheduled on weekends/after hours.

EXCLUDED FROM THIS CONTRACTORS WORK IS:

None.

SPECIAL CONSIDERATIONS:

9. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
10. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
11. Provide clean-up as outlined in the general requirements section 01550.
12. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
13. It is the responsibility of the contractor to review all drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
14. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
15. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
16. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person. This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 042000 - Masonry

SECTION 00220 WORK SCOPES

BID CATEGORY 051000 – Metal

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all in accordance with the Contract Documents and applicable codes. All Work is to be performed as shown on the plans and specified in the following Technical Specification sections:

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
051200	Structural Steel
052100	Steel Joist Framing
053100	Steel Decking
055000	Metal Fabrications
072100	Building Insulation
078413	Firestopping
078446	Firestop Joint Systems
079200	Joint Sealants

In addition to the above, this Bid Category requires adherence to and coordination with various other technical Specifications interfacing with this Work. The Bidder shall review the Work descriptions of the other Bid Categories as set forth in Section 00210 of the Project Manual and other referenced documents, so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. Any opening requiring the installation of in-wall structural steel support will be the responsibility of this contractor.
2. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.
- 3.
4. This contractor will be responsible for all re-mobilization costs for all phases of work.
5. This contractor will be responsible for all de-watering during excavations of their work.
6. This contractor shall be responsible for all layout, engineering, elevations and layout coordination with other contractors.
7. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
8. Furnish and install loose lintels for all wall penetrations which require additional structural support. This contractor will be responsible to examine all drawings for openings requiring support steel or items requiring structural support.

9. Fabrication and installation of all structural steel framing, columns, beams, sag rods, ladders, metal decking, bracing, handrail and any other miscellaneous metals.
10. Furnish and install all loose steel lintel, shelf angles, anchor bolts, masonry anchors, bearing plates, leveling plates, sleeves, all embedment and relief angles to the appropriate trades for installation as shown on drawings.
11. Contractor shall survey all steel installed to ensure plumb and level.
12. It is the responsibility of this contractor to review all drawings and specifications for areas requiring work as described by this bid category and include same in bid.
13. This contractor is responsible for proper storage and protection of steel from corrosion, deformation and other damage on site.
14. Contractor is responsible for providing steel complying with all standards listed in specifications. All new and existing steel shall be reworked as necessary to provide a complete installation. Coordination with other trades is required to determine required conditions of steel for completion of work by other trades. Contractor is responsible to provide and install steel to the conditions required for all other trades to complete work.
15. Furnish and install framing for all mechanical rooftop units and roof accessories (roof hatch, etc.) and all miscellaneous metal shown or not shown but required for a complete installation.
16. This contractor shall obtain and pay for all permits required for the work described by this bid category.
17. Contractor is responsible to tie in all new work related to this bid category with the existing building. This includes all rework of existing conditions to the satisfaction of the Construction Manager, Architect and Owner. Contractor is to perform all demolition to complete their own work, as required.
18. This contractor shall be responsible for receiving, off loading, into/onto building including the safe and secure storage of materials related to this work.
19. Include cleaning and touch up painting of bolted connections, welded connections, and abraded areas. After erection, field coat all abrasions, nuts and bolts, washers and surfaces left unpainted.
20. Contractor is responsible for shop painting and field touch-up painting for all structural steel members.
21. Contractor to provide all OSHA protection required in relation to the work of this category, including fall protection / tie off point for employees.
22. Each contractor performing demolition shall be responsible for protecting new and existing construction from damage due to their work. If any adjacent surfaces are damaged it will be the sole responsibility of the contractor at fault to completely repair and replace all damaged construction to the satisfaction of the Owner, Construction Manager and Architect.
23. Contractor is to perform all demolition to complete their own work, as required.
24. Provide daily clean-up according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction Manager will provide his labor to complete the clean-up and the appropriate contractor will be back charged.
25. Contractor is responsible for coordination with other trades, including mandatory participation in job meetings.
26. Provide layout to the mason & concrete foundation contractors for the installation of anchor bolts, bearing plates and location for RTU structural framing.
27. It is the responsibility of this contractor to ensure all roof penetrations where structural steel is installed are water tight.
28. Demo of all existing material or equipment shown or not shown but is required for a complete installation. Salvaged materials shall be turned over to the Owner. All other material is to be legally disposed of by this contractor.
29. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with Owner operations. If certain construction activities are anticipated to cause

disruption with owners' operations (noise, etc.), these activities shall be coordinated with the owner or scheduled on weekends/after hours.

EXCLUDED FROM THIS CONTRACTOR'S WORK IS:

None.

SPECIAL CONSIDERATIONS:

17. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
18. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
19. Provide clean-up as outlined in the general requirements section 01550.
20. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
21. It is the responsibility of the contractor to review *all* drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
22. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
23. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
24. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person. This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 051000 – Metal

**SECTION 00220
WORK SCOPES**

BID CATEGORY 061000 – General Trades

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, temporary walls, hoisting and incidentals to complete all in accordance with the Contract Documents and applicable codes. All Work is to be performed as shown on the plans and specified in the following Technical Specification sections:

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
054000	Cold Formed Metal Framing
055000	Metal Fabrications
061000	Rough Carpentry
064023	Interior Architectural Woodwork
072100	Building Insulation
074213	Metal Wall Panels
074244	Aluminum Composite Metal Panels
076200	Sheet Metal Flashing and Trim
078413	Firestopping
078446	Firestop Joint Systems
079200	Joint Sealants
081113	Standard Steel Doors and Frames
081116	Fire Rated Aluminum Doors and Frames
081416	Flush Wood Doors
084113	Aluminum Entrances and Storefronts
087100	Door Hardware
088000	Glazing
092900	Gypsum Wallboard Assemblies
093000	Tile
095113	Acoustical Ceilings
096519	Resilient Tile Flooring
096623	Epoxy Terrazzo
096815	Carpet Tile
099100	Painting
101100	Visual Display Boards
102800	Toilet and Bath Accessories
105113	Metal Lockers
122413	Roller Shades
123204	Pre-manufactured Casework

In addition to the above, this bid category includes but is not limited to the Bidding Documents, the Bidding and Contract requirements and Division 1 General Requirements of the Project Manual and various other Technical

Specifications interfacing with this work. The bidder is advised to review the work descriptions of the other categories and other referenced documents so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. It is the responsibility of this Bid Category to review all drawings & drawing notes and include items requiring work that is generally defined as the responsibility of this Bid Category within the work description unless otherwise noted above in the scope of work.
2. Contractor shall install all louvers. Louvers to be provided by mechanical contractor. Coordinate openings with masonry contractor
3. All penetrations through walls and ceilings will be fire and smoke stopped as required to comply with the state fire safety requirements. Provide and install all firestopping materials. Contractor shall restore all surfaces to match existing conditions after completion of their work. This shall include drywall, pre-cast decks, masonry, acoustical ceilings, steel, roofing and concrete work.
4. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
5. This contractor will be responsible for all re-mobilization costs for all phases of work.
6. This contractor shall coordinate the location and sizes of all openings with the appropriate trades.
7. Contractor shall coordinate with all contractors on the location and installation of all access panels. Access panels shall be provided to the contractor responsible for this bid category by other trades.
8. This contractor shall be responsible for receiving, off loading, hoisting into/onto building including the safe and secure storage of materials related to this work.
9. Coordinate with all other trades, including mandatory participation in job meetings.
10. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.
11. If installation of this contractors work requires saw-cutting the concrete floors, this same contractor is also responsible for pouring back concrete. This contractor must coordinate with flooring contractor as to provide proper floor finish and height. Before sawcutting or making any cuts in the floor, all contractors must use ground penetrating radar, and must provide proof that it was used to the Barton Malow site superintendent.
12. Provide daily clean-up according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction manager will provide a laborer to complete the clean-up and the appropriate contractor will be back charged.
13. This contractor shall be responsible for layout engineering as it pertains to this work, coordinate layout with all other contractors.
14. Contractor will be responsible for storing all materials in an acceptable manner with Barton Malow, Owner and Architect.
15. This contractor is responsible for all demolition (excluding electrical work) shown or not shown on the drawings. Contractors performing demolition shall be responsible for protecting new and existing construction from damage due to their own work. If any adjacent surfaces are damaged, it will be the sole responsibility of the contractor at fault to completely repair and replace all damaged construction to the satisfaction of the Owner, Construction Manager, and Architect.

16. This contractor is responsible for the work described in the Demolition Key Notes and General Notes as shown on drawing A0.1.
17. This contractor is responsible for the work described in the Patching Notes and General Notes as shown on drawings A1.1.
18. This contractor is responsible for the work described in the Reflected Ceiling Plan General Notes as shown on drawing A2.1
19. This contractor is responsible for the work described in the General Notes as shown on drawing A6.1
20. This contractor is responsible for the work described in the General Notes and Specific Notes as shown on drawing A10.1
21. Provide joint sealers where shown and/or required as associated with this contractor's own work including but not limited to gypsum walls, millwork, casework, hollow metal frames.
22. Furnish, install and maintain all shoring and bracing as required. Leave shoring in place until new building systems are in place and then remove as required. Prior to installation of shoring and bracing efforts, provide shop drawings on the proposed shoring and bracing design. A registered engineer in the State of Michigan must seal drawings.
23. Contractor is responsible to verify all interior and exterior door dimensions to ensure proper fit.
24. Supply and install all required surface treatments, sealers, and subfloor preparation including all preparation and cleaning required.
25. It is this contractor's responsibility to keep the elevations of all subfloor preparation to within 1/8" inch of finish grade.
26. Contractor shall provide materials for and construct all temporary walls. This work shall be completed upon written notice by the CM. If temporary walls are not erected following written notice from CM, the Construction manager reserves the right to erect and the contractor will be back charged
27. This contractor shall perform all work necessary for subfloor preparation to ensure that all existing and new concrete slabs are free of any cracks (surface cracks, from settling or heaving) and level. Upon written notification from the CM or Architect in reference to deficiencies, remedial work must be performed in such a manner as to not delay the installation of the flooring. The CM reserves the right to supplement this remedial work so as not to cause any delays at this contractor's expense. This contractor is responsible to provide testing and results levelness of existing concrete slabs prepared for finishing flooring upon written request from the CM. Refer to specification section 035300 Concrete Topping and Repair, issued by the Architect.
28. Coordinate the location and sizes of all openings with the appropriate trades. Provide appropriate opening in walls and floors for all electrical equipment. Coordinate closely with electrical trades for opening sizes and locations.
29. Furnish and install sleeves in all walls related to this bid category.
30. Furnish and install all joint sealants.
31. It is this contractor's responsibility to review all drawings. Remove, patch and/or replace any ceiling systems as required to perform work of this category.
32. Provide all new casework, as specified, including all countertops, related backsplashes, hardware fillers, accessories and caulking required for complete project.

33. Provide all openings in countertops, casework and sound booths for other categories.
34. This contractor will field verify all openings for new and existing casework, cubbies, millwork, shelving, etc.
35. Contractor is responsible to tie in all new work related to this bid category with the existing building. This includes all rework of existing conditions to the satisfaction of the Construction Manager, Architect and Owner. Contractor is to perform all demolition to complete their own work, as required.
36. Provide all backing, wood blocking and shims for proper anchorage, as required, for work of this category and others, to include specialties, countertops, wood trim work and equipment.
37. Provide and install all finish wood trim, woodwork and millwork, shelving, and all other finish carpentry, as specified.
38. This contractor shall set all door frames. Setting and installation of all door frames within masonry shall be done by the contractor responsible for bid category 042000 masonry. Provide labor and materials to grout all hollow metal frames as specified or required. Check frames for plumb and square during the frame installation and before doors are to be installed. Correct any deficiencies in plumbness, levelness and squareness.
39. Provide and install all wood and hollow metal doors, including all finish hardware and related items as required.
40. Supply and install cylinders capable of receiving the cores which match the owner's keying system. Cores to be supplied by owner.
41. Supply and install all glass and glazing required for this project in all hollow metal doors & windows, sidelights, fiberglass reinforced doors and aluminum windows, as specified.
42. Provide and install complete gypsum wallboard, cement board, framing, layout, insulation backing, drip edges, metal edge angles, sealants, expansion joint assemblies, backer rods, through-wall flashing, window flashing, control joints, including all accessories. This contractor is responsible for providing final wall construction to meet code requirements.
43. Provide labor and material to perform all taping, sanding and finishing of drywall and plaster surfaces to degree ready for acceptance of final wall treatment and obtain approval for application of all finishes.
44. Provide and install paint for all interior surfaces, exterior surfaces, exterior lintels, concrete floors, as required, including epoxy painting work.
45. This contractor is responsible to investigate the completed surfaces of all walls, ceilings, soffits, etc., of drywall, masonry and other construction to determine and approve finishes established by those trades to which all work of this category applies. Prepare all surfaces to receive paint as specified, including all minor repairs.
46. Provide finishing for all wood surfaces requiring on-site finishing.
47. Contractor is responsible for all touch-up of hollow metal frames and sidelites after installation of doors and glass.
48. Install all access doors for proper access to equipment and devices of other trades in acoustical ceilings, gypsum board, cementitious coatings and plaster construction. Access panels required by other trade Contractors, whether shown or not shown, will be furnished by the same and installed by contractor responsible for Bid Category 061000 General Trades.
49. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with the Owner operation. If certain construction activities are anticipated to cause disruption with owners' operations (noise, etc.), these activities shall be scheduled on weekends or after hours.

EXCLUDED FROM THIS CONTRACTOR'S WORK IS:

None.

SPECIAL CONSIDERATIONS:

25. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
26. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
27. Provide clean-up as outlined in the general requirements section 01550.
28. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
29. It is the responsibility of the contractor to review all drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
30. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
31. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
32. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person. This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 061000 – General Trades

SECTION 00220 WORK SCOPES

BID CATEGORY 230000 – Mechanical

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all in accordance with the Contract Documents and applicable codes. All Work is to be performed as shown on the plans and specified in the following Technical Specification sections:

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
078413	Firestopping
078446	Firestop Joint Systems
079200	Joint Sealants
200500	Mechanical General Requirements
200510	Basic Mechanical Materials and Methods
200513	Motors
200516	Pipe Flexible Connectors, Fittings and Loops
200519	Meters and Gages
200523	Valves
200529	Hangers and Supports
200547	Mechanical Vibration Controls
200553	Mechanical Identification
200700	Mechanical Insulation
211100	Fire Suppression System
220533	Heat Tracing for Plumbing
221116	Domestic Water Piping
221119	Domestic Water Piping Specialties
221316	Sanitary Waste and Vent Piping
221319	Drainage Piping Specialties
221413	Storm Drainage Piping
224200	Plumbing Fixtures
230130	HVAC Air-Distribution System Cleaning
230500	Common Work Results for HVAC
230593	Testing, Adjusting, and Balancing
230933	Temperature Controls
232113	Hydronic Piping
232500	HVAC Water Treatment
232510	Piping Systems Flushing and Chemical Cleaning
233113	Metal Ducts
233300	Duct Accessories
233416	Centrifugal Fans
233423	Power Ventilators
233600	Air Terminal Units

233713	Diffusers, Registers, and Grilles
238120	Unitary Rooftop Air Conditioners
238219	Fan-Coil Units
238229	Electric and Hot Water Radiant Heating Units

In addition to the above, this Bid Category requires adherence to and coordination with various other technical Specifications interfacing with this Work. The Bidder shall review the Work descriptions of the other Bid Categories as set forth in Section 00210 of the Project Manual and other referenced documents, so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. This contractor shall be responsible for all layout, engineering, elevations and layout coordination with other contractors. It is the responsibility of this contractor to hire an accredited surveying firm approved by Barton Malow Company to layout all work of this category. Upon completion of the work furnish signed and sealed as-builts that tie all site improvements to property lines and/or building corners and meet the requirements of Section 01720 of the Project Manual.
2. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
3. All required permits, fee applications, etc., required for execution of the work as required by code and local authorities shall be included in this bid. This shall include all city, township, gas company and/or other fees related to this contractor's work.
4. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.
5. This contractor will be responsible for all re-mobilization costs for all phases of work.
6. This contractor is responsible for all rigging and hoisting, as required for their work.
7. This contractor is responsible for all mechanical demolition as shown on drawings. Contractors performing demolition shall be responsible for protecting new and existing construction from damage due to their own work. If any adjacent surfaces are damaged, it will be the sole responsibility of the contractor at fault to completely repair and replace all damaged construction to the satisfaction of the Owner, Construction Manager, and Architect.
8. Contractor is responsible to tie in all new work related to this bid category with the existing building. This includes all rework of existing conditions to the satisfaction of the Construction Manager, Architect and Owner. Contractor is to perform all demolition to complete their own work, as required.
9. If installation of this contractors work requires saw-cutting the concrete floors, this same contractor is also responsible for pouring back concrete. This contractor must coordinate with flooring contractor as to provide proper floor finish and height. Before sawcutting or making any cuts in the floor, all contractors must use ground penetrating radar, and must provide proof that it was used, to the Barton Malow site superintendent.
10. This contractor is responsible for the work described in the Demolition Key Notes as shown on drawing M1.1
11. This contractor is responsible for the work described in the Plumbing General Notes and Construction Notes as shown on drawing M2.0
12. This contractor is responsible for the work described in the Plumbing General Notes, Fire Protection General Notes and Construction Notes as shown on drawing M2.1

13. This contractor is responsible for the work described in the HVAC Piping General Notes and Construction Notes as shown on drawing M3.1
14. This contractor is responsible for the work described in the Sheet Metal General Notes and Construction Notes as shown on drawing M4.1
15. Contractor is responsible to provide all temporary heat as required.
16. This contractor is responsible for the work described in the Schedules General Notes as shown on drawing M7.2
17. This contractor is responsible for the work described in the General Notes as shown on drawing M8.1
18. The first floor sub-grade will be placed and compacted prior to the start of the underground work designated in this package. This contractor is responsible to excavate, install work and replace all fill to the specified density material within the building interior to the same condition it was prior to starting excavation for underground.
19. Provide piping and connections to site utilities, as shown. This contractor is responsible to terminate connections 5 feet outside of building. This contractor is responsible for all excavation, backfill and compaction for their work.
20. Contractor to provide all temperature controls wiring, testing and balancing as required to provide a complete finished system.
21. This contractor is to verify and stake locations of all underground utilities before beginning their work.
22. Coordinate with Architect/Engineer before penetrating any structural members.
23. Provide mechanical identifications for all pipes and valves including a valve schedule.
24. Furnish all new louvers including architectural louvers, as specified. Louvers to be installed by General Trades Contractor. Outside air louvers are to be electrostatic painted by this contractor. Coordinate with all other trades for the location and size of all openings for louvers.
25. This contractor shall cut and patch all roofing materials and metal deck in the building for the installation of their work. Contractor to coordinate with roofing and steel contractor to complete this work. Installation to be sealed and watertight.
26. This contractor is responsible for covering and securing (water-tight) all penetrations thru floors or roof area and any other of their openings.
27. This contractor is responsible for cutting and patching of all existing materials for the installation of their work. All penetrations through walls and ceilings will be fire and smoke stopped as required to comply with the state fire safety requirements. Provide and install all firestopping materials. Contractor shall restore all surfaces to match existing conditions after completion of their work. This shall include drywall, pre-cast decks, masonry, acoustical ceilings, steel, roofing and concrete work.
28. Provide and locate all access doors to architectural trades for setting as required for access to mechanical equipment.
29. This contractor is responsible for all sheet metal work, piping, and mechanical equipment required for the complete heating and cooling systems including but not limited to: AHU's, chiller, EF's, grilles, diffusers, pumps, valves, and unit heaters.

30. This contractor is responsible for all plumbing (sanitary, storm, gas, hot and cold water, refrigerant vent, acid waste, compressed air, and heating/cooling piping), valves, equipment (water heaters, air compressors, etc), plumbing fixtures, plumbing specialties, and accessories as required.
31. Pressure test all underground pipes as required in the specifications and plumbing codes.
32. This contractor will be required to direct all related trades as to locations and sizes of penetrations to new surfaces. If proper coordination is not provided it will be the responsibility of this contractor to cut, patch and revise all holes and penetrations for the installation of all pipe and ductwork. All penetrations through walls, floors, and ceilings will be fire and smoke stopped so as to comply with the Office of Fire Safety requirements.
33. Prior to final acceptance this contractor shall clean all floor drains and associated piping and remove all dirt and debris. Test with running water for good draining after cleaning.
34. Provide protection of equipment. Costs incurred due to damage of equipment because of lack of adequate protection will be the responsibility of this contractor. This includes temporarily capping all floor drains and pipes so as to prevent concrete and other construction debris from entering the plumbing.
35. Coordinate layout and installation of all mechanical piping and ductwork with other trades. This contractor is responsible for the proper location and sizes of all mechanical openings by other trades. Any corrective work necessary to wall or floor openings will be the responsibility of this contractor.
36. This contractor is to furnish duct-work coordination drawings to all related trades prior to their work commencing.
37. This contractor is to furnish and install toilet accessories including, but not limited to: mirrors, electric hand dryers, dispensers and grab bars, as required. This contractor is also to install the following toilet accessories provided by the Owner: toilet paper dispensers, soap dispensers, napkin disposals, and sanitary napkin dispensers.
38. This contractor is responsible for the insulation of all mechanical and plumbing systems (pipes, fittings, duct, etc) as required and specified.
39. This contractor is responsible for all caulking, gaskets, and sealing of mechanical and plumbing systems to provide air, water, and weather tight connections including but not limited to sealing of wall and floor penetrations and plumbing fixtures.
40. Furnish and install all motors, starters, disconnect switches that are lose from the equipment or part of packaged mechanical equipment that are necessary for the operation and control of all equipment as required. This contractor will be responsible for all supports necessary to mount the above mentioned items. Category 260000 will provide wiring.
41. Install duct smoke detectors, supplied by Category 260000, as shown on drawings and specified.
42. The contractor's field superintendent shall be present during testing and field reviews conducted by the various inspection agencies.
43. This contractor will be responsible for all de-watering during excavations of their work.
44. It will be the responsibility of this contractor to be onsite during concrete pours to verify levelness and pitch of all floor drains.
45. Provide daily clean-up, according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction Manager will provide his labor to complete the clean-up and the appropriate contractor will be back-charged.

46. Coordination with other trades, including mandatory participation in job meetings.
47. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with Owner operations. If certain construction activities are anticipated to cause disruption with owners' operations (noise, etc.), these activities shall be coordinated with the owner or scheduled on weekends/after hours.
48. Contractor is responsible for painting of all interior and exterior mechanical lines.

EXCLUDED FROM THIS CONTRACTOR'S WORK is:

1. Supply and connection of duct mounted smoke detectors. (Category 260000)
2. Electrical wiring for power. (Category 260000)

SPECIAL CONSIDERATIONS:

33. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
34. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
35. Provide clean-up as outlined in the general requirements section 01550.
36. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
37. It is the responsibility of the contractor to review all drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
38. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
39. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
40. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person. This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 230000 – Mechanical

SECTION 00220 WORK SCOPES

BID CATEGORY 260000 - Electrical

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all Electrical in accordance with the Contract Documents and applicable codes. All Work is to be performed as shown on the plans and specified in the following technical Specification sections:

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
078413	Firestopping
078446	Firestop Joint Systems
079200	Joint Sealants
260010	Electrical General Requirements
260500	Basic Electrical Materials and Methods
260519	Conductors and Cables
260526	Grounding and Bonding
260529	Hangers and Supports for Electrical Systems
260533	Raceways and Boxes
260553	Electrical Identification
260573	Overcurrent Protective Device Coordination and Arc Flash Study
260923	Lighting Control Devices
260999	Electrical Testing
262200	Dry-Type Transformers (600 V and less)
262416	Panelboards
262726	Wiring Devices
262813	Fuses
262816	Enclosed Switches and Circuit Breakers
262913	Enclosed Controllers
264313	Surge Protective Devices
265100	Interior Lighting
275123	School Intercom and Program Equipment
275313	Clock and Program System
283100	Fire Alarm

In addition to the above, this Bid Category requires adherence to and coordination with various other technical Specifications interfacing with this Work. The Bidder shall review the Work descriptions of the other Bid Categories as set forth in Section 00210 of the Project Manual so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. This contractor shall be responsible for all layout, engineering, elevations and layout coordination with other contractors. It is the responsibility of this contractor to hire an accredited surveying firm approved by Barton Malow Company to layout all work of this category. Upon completion of the work furnish signed and sealed as-builts.
2. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
3. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.
4. Contractor responsible to supply and connect all duct mounted smoke detectors.
5. Contractor responsible to provide all electrical wiring for power.
6. This contractor shall provide all temporary lighting and power for this project as specified in the Special Conditions. All temporary lighting shall comply with MISOHA, OSHA and any other authorities having jurisdiction, including proper lumen ratings throughout the site. Contractor shall also provide all heat trace as required to maintain temporary power. Any temporary power damaged due to lack of heat trace shall be this contractors responsibility to repair and replace.
7. Obtain approvals, permits and coordinate the inspection and testing of the systems with state governing agencies. This contractor is responsible for and shall coordinate all work with public utility companies, as required. Pay for all fees and testing charges for each system.
8. This contractor is responsible for all electrical demolition. Contractors performing demolition shall be responsible for protecting new and existing construction from damage due to their own work. If any adjacent surfaces are damaged, it will be the sole responsibility of the contractor at fault to completely repair and replace all damaged items to the satisfaction of the Owner, Construction Manager, and Architect.
9. This contractor is responsible for the work described in the Demolition Notes & General Demolition Notes as shown on drawing E1.1.
10. This contractor is responsible for the work described in the Construction Notes & General Notes as shown on drawing E2.1.
11. This contractor is responsible for the work described in the Construction Notes & General Notes as shown on drawing E3.1.
12. This contractor is responsible for the work described in the Construction Notes & General Notes as shown on drawing E5.1.
13. This contractor will provide all temporary lighting and power as specified in the Special Conditions.
14. This contractor will be responsible for all re-mobilization costs for all phases of work.
15. Provide blank covers for data receptacles not used.
16. The contractor's field superintendent shall be present during testing and field reviews conducted by the various inspection agencies.
17. This contractor will be responsible for all hoisting and handling necessary to complete this work.

18. Contractor is responsible for all rough-ins and final electrical connections for electrical equipment, specialties, and casework, as specified. Coordinate with other trades to provide all required electrical connections. Furnish and install all electrical equipment and accessories.
19. If installation of this contractors work requires saw-cutting the concrete floors, this same contractor is also responsible for pouring back concrete. This contractor must coordinate with flooring contractor as to provide proper floor finish and height. Before sawcutting or making any cuts in the floor, all contractors must use ground penetrating radar, and must provide proof that it was used, to the Barton Malow site superintendent.
20. This contractor is responsible for all layout necessary for underfloor electrical work
21. Verify locations of all underfloor utilities before work begins.
22. Coordinate with Architect/Engineer before penetrating any structural members.
23. Provide proper identification of panels, circuits and systems.
24. Furnish and install all specified backing and supports for fixtures and equipment.
25. This contractor will provide all conduit, wiring, panels, devices, switches and accessories necessary for the installation of a complete power system.
26. Provide and locate all access doors to architectural trades for setting as required for access to electrical equipment.
27. This contractor is to wire all motors, disconnect switches, and starters supplied by either themselves or category 230000.
28. Provide and install all conduits, raceways, and boxes. This contractor must coordinate with all trades for work scheduling, equipment type and sizing.
29. This contractor is responsible for the cutting and patching of all existing materials for the installation of all electrical work. All penetrations through walls and ceilings will be fire and smoke stopped to comply with the State Fire Safety Requirements. Provide and install all firestopping materials. Contractor shall restore all surfaces to match existing conditions. This shall include all drywall, masonry, acoustical ceilings, steel, concrete (saw-cutting & in-fill).
30. Provide protection of equipment. Damage to equipment due to a lack of adequate protection will be the responsibility of this contractor.
31. Provide complete lighting system with occupancy and/or automated lighting controls as required.
32. Provide daily clean-up, according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction Manager will provide his labor to complete the clean-up and the appropriate contractor will be back-charged.
33. This contractor is responsible for all testing of electrical systems upon completion of the installation.
34. Coordination with other trades, including mandatory participation in job meetings.
35. This contractor is responsible to repair any damaged existing circuiting in order to connect all new electrical systems/items. Contractor to provide a complete installation of all conduits, raceways, boxes, circuiting and lighting.

36. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with the Owner operation. If certain construction activities are anticipated to cause disruption with owners' operations (noise, etc.), these activities shall be scheduled on weekends or after hours.

EXCLUDED FROM THIS CONTRACTOR'S WORK IS:

None.

SPECIAL CONSIDERATIONS:

41. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
42. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
43. Provide clean-up as outlined in the general requirements section 01550.
44. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
45. It is the responsibility of the contractor to review all drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
46. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
47. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
48. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person. This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 260000 – Electrical

SECTION 00220 WORK SCOPES

BID CATEGORY 310000 – Sitework

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all Earthwork, Site Utilities in accordance with the Contract Documents and applicable codes. All Work is to be performed as shown on the plans and specified in the following technical Specification sections:

<u>Specification Section</u>	<u>Description of Section</u>
012300	Alternates
013219	Schedule of Required Submittals
013300	Submittal Procedures
014213	Abbreviations
014216	Standards and Definitions
016000	Product Requirements
017300	Execution Requirements
017329	Cutting and Patching
017836	Warranties
017839	Electronic Project Record Documents
024119	Selective Demolition
310516	Soils and Aggregates
311000	Site Clearing
312010	Building Earthwork
312213	Rough Grading
312316	Excavation
312317	Trenching
312323	Fill
312513	Erosion Controls
321216	Asphalt Paving
321313	Concrete Paving
321373	Concrete Paving Joint Sealants
329113	Soil Preparation
329119	Landscape Grading
329219	Seeding s
330513	Manholes and Structures
334100	Storm Utility Drainage Piping
334600	Subdrainage

In addition to the above, this Bid Category requires adherence to and coordination with various other technical Specifications interfacing with this Work. The Bidder shall review the Work descriptions of the other Bid Categories as set forth in Section 00210 of the Project Manual so as to not misunderstand scope responsibilities.

THE SCOPE OF WORK IS TO INCLUDE, but is not limited to, the following items:

1. Upon completion of the work it will be this contractors responsibility to restore the site to it original conditions. This will include but not limited to the following Grading, seeding, replacement of damage to any side walks or curbs, fencing, playground areas, irrigation systems, edging etc...
2. This contractor shall provide adequate supervision of sub-contractors and field personnel. This includes a field superintendent responsible for all work with the ability to make decisions.

3. Contractor shall be responsible for all staking necessary to complete their own work. Contact MISSDIG prior to any work which may conflict with existing underground utilities.
4. This contractor shall be responsible for all layout, engineering, elevations and layout coordination with other contractors. It is the responsibility of this contractor to hire an accredited surveying firm approved by Barton Malow Company to layout all work of this category. Upon completion of the work furnish signed and sealed as-builts that tie all site improvements to property lines and/or building corners and meet the requirements of Section 01720 of the Project Manual.
5. Contractor shall complete all work as shown on drawings C2.1 and C3.1.
6. Contractor shall provide all fall protection, lifts and scaffolding as required to complete their own work. Fall Protection and scaffolding shall comply with MIOSHA, OSHA and any other authorities having jurisdiction.
7. Verify and stake locations of all existing underground utilities before work begins.
8. Provide photo identification badges to be worn by contractor's field personnel at all times.
9. Provide and maintain all soil erosion fencing, filters, and traps as required by governing agencies.
10. This contractor will be responsible for all re-mobilization costs for all phases of work.
11. This contractor will include street cleaning per the Barton Malow site superintendent's discretion. This contractor will include any mobilization costs necessary.
12. Contractor to include in their base bid an allowance of \$20,000 to be used to obtain and purchase all permits and fees required to perform the work contained in this category, from the appropriate agencies. Copies of all invoices of the agency fees are to be submitted when billing against the allowance on the pay application.
13. Provide all clearing, grubbing, earthmoving, excavation, filling, back-filling, sheeting, shoring, bracing, saw-cutting, grading, and site balancing required for this project as specified.
14. Provide all sanitary sewer, storm sewer, underdrains, edgedrains and watermain as specified.
15. Provide all site concrete including but not limited to sidewalks and curbs as shown on drawings. Place, grade and compact the required granular cushions, as specified, for site concrete placement. Provide and install all concrete reinforcements, curing compounds, control joints, expansion joints, joint sealants, caulking, fillers and related accessories, as specified.
16. This contractor is responsible for all site demolition as shown on drawings including but not limited to trees, tree stumps, asphalt, concrete, curb, fencing.
17. Contractor is to remove all brush, trees and overgrowth shown to be demolished. Contractor also responsible for any additional demolition noted as required by other trades in order for them to complete their work. This demolition will be conducted following review and approval by the Construction Manager, Architect and Owner.
18. Provide all asphalt paving and pavement striping and marking.
19. This contractor is responsible for removal of all their own spoils off-site.
20. This contractor will be responsible to remove all topsoil and backfill to specified elevation with class II material.
21. This contractor is responsible for dewatering within their own excavations during the performance of their own work.

22. Provide and install all topsoil, seeding, sodding, fertilizer and mulch, as specified.
23. Provide all landscaping and irrigation work, as specified.
24. Provide all grading, leveling, and restoration for all trades, when construction is complete to allow for the installation of all planted materials, concrete, asphalt, etc., on site.
25. Provide all new flag poles complete with bases, as specified.
26. Provide all fencing and gates as specified.
27. Provide daily clean-up, according to Barton Malow standards, including daily removal of all materials and debris related to this category. If daily clean-up is not performed, the Construction Manager will provide his labor to complete the clean-up and the appropriate contractor will be backcharged.
28. Coordination with other trades, including mandatory participation in job meetings.
29. Owners' operations take precedence over all construction activities. All cutover from existing systems to new systems shall not interfere with the Owner operation. If certain construction activities are anticipated to cause disruption with owners' operations (noise, etc.), these activities shall be scheduled on weekends or after hours.

EXCLUDED FROM THIS CONTRACTOR'S WORK is:

None.

SPECIAL CONSIDERATIONS:

49. This contractor shall provide dumpsters and/or removal offsite of all demolition and general debris created by the work of this contractor.
50. All work under this scope shall comply with proper trade jurisdictions, even if it is necessary to assemble composite crews or subcontract to appropriate trades.
51. Provide clean-up as outlined in the general requirements section 01550.
52. Contractor is responsible to furnish all Barton Malow Co. start-up documents within two (2) weeks of contract award. This includes signed contract, bonds, certificate of insurance, shop drawings and submittals, and contractors safety program with signed safety agreement (01600), Safety Program Review checklist (01600) and MSDS.
53. It is the responsibility of the contractor to review all drawings & drawing notes, including civil, architectural, structural, mechanical, electrical drawings, and specifications. Contractor shall provide and install all materials within this bid category unless otherwise noted above as excluded from this scope of work.
54. Bidder shall complete the Bid form in its entirety, special attention is directed to the Alternates and Unit Prices Section of the Bid Form.
55. The special provisions outlined in Section 00210 Description of the Work form a part of this bid category work description and apply to this bidder's scope of work.
56. This contractor is responsible to create a safety binder which will include the following information: site specific safety program, signed safety agreement (01600), MSDS sheets, Asbestos Training Certificates, CPR/first aid certificates, Lift certifications, Lead Renovators Certificates, Storm Water Certificates, Equipment Maintenance Logs, Equipment Training Letters, Roof Work Permits, & Letter indicating competent person.

This information will be organized and clearly marked with the contractors name, address and division on the exterior of a 3 ring binder for each building you will be working at.

END OF BID CATEGORY 310000 –Sitework

END OF SECTION 00220

SECTION 00230 SCHEDULE AND PHASING

1. GENERAL

1.1. MILESTONE SCHEDULE

- 1.1.1. The following are the milestone schedule dates for the listed Work and will become a part of the Contract Documents. The master construction schedule will be developed after award of the Agreement with Contractor input.

MILESTONE ACTIVITY	SCHEDULED START	SCHEDULED COMPLETION
Additions & Remodeling at Boulton Park Middle School & Larson Middle School	August 4, 2014	July 17, 2015

- 1.1.2. It is expressly agreed that time is of the essence for the completion of Work under the Agreement and Contractor agrees to perform the Work within the allotted time and in the manner specified. Contractor shall be liable for any and all damages and expenses suffered by the Owner or CM arising or resulting from the failure of Contractor to perform the Work in accordance with the construction schedule.

1.2. CONSTRUCTION SCHEDULE DEVELOPMENT PROCESS

- 1.2.1. Contractor agrees to commence Work in the field within five (5) Days after being notified to do so by the CM. Contractor shall diligently perform and fully complete all Work to the satisfaction of CM and Owner.
- 1.2.2. Work shall begin at such points as CM may designate and shall be carried to completion with the utmost speed.
- 1.3.2. Contractor shall submit to CM within fifteen (15) Days of award of the Agreement all necessary scheduling information, in form and substance satisfactory to CM of all activities contained in the Contractor's scope of Work, including activity descriptions and durations in working days, for shop drawings, fabrication, delivery and installation of products, materials and equipment. This schedule shall identify precedent relationships between Contractor's activities and those of other contractors, the dollar value, necessary manpower loadings, and precedent activities for other contractors. The activities on the schedule must be at a level of detail approved by CM and should agree with the terminology and building sequencing established by CM. CM will compile all Contractors' schedules and develop a project master construction schedule. Once the individual contractors schedules are agreed upon by CM, this project master construction schedule will become the project plan for construction.
- 1.3.3. Special requirements and/or sequencing issues should be brought to the attention of CM. It is intended the milestones remain in effect and all Bidders agree to accept the milestone dates. CM reserves the right to revise the project master construction schedule as deemed necessary. CM reserves the right to revise the project master construction schedule as deemed necessary.
- 1.3.4. CM shall periodically update the project master construction schedule and display it at the Project site. Contractor shall familiarize itself with the project master construction schedule and how it will affect or modify its operations, including coordination with the activities of other contractors. Reasonable changes in sequencing, durations and phasing are to be expected with each master schedule update. These changes will be made by Contractor at no additional cost. Reasonable changes in sequencing, durations, and phasing are to be expected with each master schedule update. These changes will be made by Contractor at no additional cost.
- 1.3.5. If it is apparent Contractor is unable to perform its Work in the sequence indicated or the time allotted, Contractor must notify CM within five (5) Days after initial publication of the project

master construction schedule. Contractor's schedule of activities may be re-sequenced, and the schedule may be adjusted, provided all Work is completed within the stated milestone dates and provided CM and affected contractors are notified of the change within five (5) calendar days of receipt of the schedule and the change does not otherwise negatively impact the other scheduled work; otherwise, the project master construction schedule shall be deemed accepted by all parties and becomes a contractual requirement for each Contractor.

- 1.3.6. If Contractor delays progress for any reason other than those delays specifically excused under the Contract Documents, Contractor will take all necessary steps to expedite its Work to maintain milestone target dates at no expense or additional cost to Owner or CM.
- 1.3.7. If Contractor is behind schedule and is so notified by CM, Contractor shall be required to accelerate the Work at its own expense. Contractor shall furnish to CM a short interval schedule of its Work showing location, number of men and crew required to get back on the agreed upon master construction schedule. If Contractor fails to maintain and meet the short interval schedule, Owner through CM reserves the right to take whatever steps it deems necessary in its sole discretion to recover the schedule at the Contractor's expense. The Contractor shall employ such means as overtime work, multiple work shifts, and additional equipment, all without additional compensation, and shall continue to do so until the progress of the Work, in the opinion of CM, is in conformance with the master project construction schedule.
- 1.3.8. Contractor agrees that it shall have no claim against the Owner, Architect, or CM for an increase in the contract price nor for a payment or allowance of any kind for damage, loss, or expense arising or resulting from delays, regardless of whether the delay is the basis for an extension of time. This provision includes claims for damage, loss, or expense arising or resulting from interruptions to, or necessary suspension of, Contractor's Work to enable other contractors to perform their work.

END OF SECTION 00230

SECTION 00400
BID PROPOSAL FORM
(Submit TWO copies - Fill in all Blanks)

DATE: _____

TO: Troy School District Administration Office
4400 Livernois Rd
Troy, MI 48098

PROJECT: Troy School District 2013 Bond Program
Series 1, Bid Package #6
Additions & Remodeling at Boulan Park
Middle School & Larson Middle School

ATTN: Kenneth Miller
Executive Director

CM :Barton Malow Company

Architect: TMP Architecture

Name of Bidding Co.:

Contact Name:

Email Address:

Business Address:

Phone Number:

**Bid Proposal for
Category(ies):**

Bidder, in compliance with the Advertisement to Bid for construction contemplated for Bid Package No. 6 Additions & Remodeling at Boulan Park Middle School & Larson Middle School, having carefully examined the Bidding Documents and the site of the proposed Project and the conditions affecting the proposed Work in the Bid Category(ies) including the condition of the Project site, any surface or subsurface obstruction, the actual levels, all excavating, filling in, removal and demolition, measurements and quantities involved in the Work, the availability of labor, materials and equipment, and the weather conditions that may possibly may be experienced in the Project vicinity, proposes to furnish all labor, materials, tools, equipment, machinery, equipment rental, transportation, superintendence, and services as are necessary to perform all Work in the Bid Category(ies) stated in accordance with the Contract Documents for the Base Bid and Alternate amounts stated below.

If identified as one of the apparent lowest bidder(s) for a Bid Category Bidder agrees to meet immediately with CM and shall submit post bid information as described in Section 00200 Instructions to Bidders.

Bidder, if awarded a contract, agrees to: (1) execute the Agreement within fifteen (15) days of receiving notice of the award; (2) provide performance/payment bonds and insurance certificates in full compliance with the Contract Documents, (3) submit the Project Safety Program as described in Section 00200 Instructions to Bidders; (4) commence Work upon execution of the Agreement or at such other time as directed in the notice of award, and (5) to complete its Work in accordance with the Contract Documents and within the milestone activity dates and durations set forth in the Bidding Documents and subsequent construction project master schedule established by CM. In the event Bidder defaults in complying with any portion of this paragraph, Bidder specifically agrees that the entire bid security

amount shall become the property of Owner as liquidated damages constituting the reasonable estimate of the damages that Owner would incur for delays and additional expenses in the event of such default, and not as a penalty.

BASE BID: Bidder agrees to perform all Work for Bid Category(ies) as described in the Contract Documents, for the Base Bid(s) stated below. The Base Bid(s) shall include the cost of Performance and Payment Bonds. For each Bid Category to be bid, include the Base Bid, written and in figures, the cost of the Performance Bond and Payment Bond which is included in the Base Bid, written and in figures, and the Bid Category and description.

(Show amounts in both words and figures. In case of discrepancy, amount shown in words will govern).

BID CATEGORY	WRITTEN DESCRIPTION/AMOUNT(S)	BID AMOUNT IN FIGURES
1. Bid Category No. 033000 Concrete	_____ _____ DOLLARS	\$ _____
2. Bid Category No. 042000 Masonry	_____ _____ DOLLARS	\$ _____
3. Bid Category No. 051000 Metal	_____ _____ DOLLARS	\$ _____
4. Bid Category No. 061000 General Trades	_____ _____ DOLLARS	\$ _____
5. Bid Category No. 230000 Mechanical	_____ _____ DOLLARS	\$ _____
6. Bid Category No. 260000 Electrical	_____ _____ DOLLARS	\$ _____

7. Bid Category No. 320000 _____ \$ _____
 Sitework
 _____ DOLLARS

COMBINED BID AMOUNT**WRITTEN DESCRIPTION AMOUNT(S)****BID AMOUNT
IN FIGURES**

COMBINED BID Bidder agrees to perform all Work necessary to complete the Work in Bid Categories _____,
 _____, _____, in full accordance with the Contract Documents, for the lump sum of:

Base Bid (including bond) _____ \$ _____
 _____ DOLLARS

Amount included for bond _____ \$ _____
 _____ DOLLARS

INDIVIDUAL BUILDING PRICES:

All contractors are required to provide individual pricing for each building. The following prices are requested for accounting purposes only and will not be used to determine the low bidder. The contract will be awarded based on the total base bid. Separate contracts will not be written for individual buildings. **Failure to quote the following individual prices will result in an incomplete bid proposal form and may be disqualified by Troy School District**

Boulan Park Middle School: _____ DOLLARS \$ _____

Larson Middle School: _____ DOLLARS \$ _____

HOURLY LABOR RATES: All contractors are required to provide their company's hourly labor rates as they apply to this project. The contract may be awarded based on this information. Failure to quote the following hourly labor rates will result in an incomplete bid proposal form and may be disqualified by Troy School District.

JOB TITLE	HOURLY RATE
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____

ALTERNATES: The following Alternate(s) to Base Bid(s) are required to be offered by the respective Bidders. In the event the Alternate is accepted, Bidder agrees to perform all Work necessary to complete the Work as modified by the Alternate in full accordance with the Contract Documents, for the following add or deduct from the Base Bid as indicated: (Show amount(s) in both words and figures for Alternates. In case of discrepancy, amount shown in words will govern. Enter a dollar amount in each, even if the amount is \$0.00. Terminology such as “No Bid”, “Not Applicable”, “No Change” or “Does Not Apply”, shall not be used. If the Alternate does not apply to the Bidder, enter \$0.00.)

Alternate No. 1 for Bid Category 061000 General Trades: Add all equipment and appurtenances associated with ADA door operations at Boulan Park Middle School and Larson Middle School

Add	_____	(\$ _____)
Deduct	_____	(\$ _____)

VOLUNTARY ALTERNATES: The following voluntary Alternates are offered by the Bidder. Bidder agrees that the amounts indicated below shall be added to or deducted from the Base Bid, as indicated, for each voluntary Alternate that is accepted.

(Show amount(s) in both words and figures for voluntary alternates. In case of discrepancy, amount shown in words will govern).

BID CATEGORY	WRITTEN DESCRIPTION OF VOLUNTARY ALTERNATE AMOUNT(S)	ADD	DEDUCT
1. _____	_____	\$ _____	\$ _____

For the amount of:	_____		
	_____ DOLLARS		
2. _____	_____	\$ _____	\$ _____

For the amount of:	_____		
	_____ DOLLARS		

Bidder is required to submit sufficient detailed information to fully describe each voluntary Alternate(s) on a separate sheet(s) attached to this Bid Proposal form.

UNIT PRICES: The following Unit Prices to Base Bid Categories are required to be offered by the respective Bidders. Bidder agrees that the following amounts will be used in determining contract changes from the Base Bid for authorized Changes in the Work. Bidder shall not include these unit costs in the Base Bid amount(s). All unit prices shall include Bidder's mark-up for overhead and profit.

	BID CATEGORY CODE	DESCRIPTION OF UNIT PRICE	UNIT PRICE	
			ADD	DEDUCT
1.	320000	Undercuts – removal only per CY	\$	\$
2.	320000	1 x 3 Stone delivered and installed per CY	\$	\$
3.	320000	21AA limestone installed per CY	\$	\$
4.	320000	21AA crushed concrete installer per CY	\$	\$
5.	320000	Class II sand installed per CY	\$	\$
6.	320000	Remove/Replace 4" concrete per SF	\$	\$
7.	320000	Temporary fencing per LFT	\$	\$
8.	320000	Remove/Replace 4" asphalt per detail per SY	\$	\$
9.	320000	Curb and gutter (per detail) per LFT	\$	\$
10.	320000	Deciduous tree as shown on drawing EACH	\$	\$
11.	320000	Operator & front end loader per hour	\$	\$
12.	320000	Operator & excavator per hour	\$	\$
13.	320000	Operator & bobcat per hour	\$	\$
14.	320000	Top soil per CY	\$	\$
15.	320000	Hydroseeding per CY	\$	\$
16.	320000	Bollards (each)	\$	\$
17.	320000	Silt fence per LF	\$	\$

All applicable taxes and bond costs are included in the above Base Bid and all listed Alternates and Unit Prices.

Bid Security in the form of a bid bond from a qualified surety (), certified check (), or cashier's check (), (check one) accompanies this proposal in the amount of five (5) percent of the Base Bid amount(s). Bidder agrees that this Bid Proposal shall be irrevocable for a period of 90 Days after the day and time designated for receipt of the Bid Proposal in Section 00100 of the Project Manual.

As of the date of submission of the Bid Proposal, Bidder's worker's compensation Experience Modification Rate (EMR) for the state in which the Work is to be performed is _____. Bidder has attached to the Bid Proposal form the OSHA Form 200 / 200S indicating recordable incidence rates for the last calendar year per 200,000 man-hours for the following categories:

- 1) Total Cases _____
- 2) Lost Workday Cases _____
- 3) Non-fatal Cases Without Lost Workdays _____
- 4) Employee Hours Worked Last Year _____
- 5) Fatalities in the last year (if yes describe below) _____

Has Bidder been cited by state or federal OSHA for any serious or willful violation? If yes, please describe:

Bidder understands that the Owner reserves the right to reject any or all Bid Proposals and to waive any informalities or irregularities therein.

Bidder acknowledges receipt of the following Addenda (identify no. and date of each):

Bidder acknowledges receipt of the pre-bid conference minutes dated

If awarded a contract, Bidder's surety will be

Check

☐ I have included a fully executed and notarized copy of the familial disclosure form set forth in Section 00410 of this Project Manual with my Bid Proposal.

Bidder accepts the provisions of the Bidding and Contract Documents and certifies that this Bid Proposal is submitted in good faith and without collusion with any other person or entity submitting a Bid Proposal for the Work. If Bidder is required to be licensed in the state where the work is performed add "Bidder certifies that it meets all licensing requirements of the state in which work is to be performed, its current license number and classification are as follows: _____ Bidder hereby affixes its authorized signature(s) representing (check one):

_____ An individual doing business as _____

_____ A partnership

_____ A limited liability company, organized in _____ (enter state)

_____ A corporation, organized in _____ (enter state)

_____ Joint venture formed between _____ and _____

_____ (Signature from authorized representatives of each partner are required)

_____ An Agent with a Current Power of Attorney must be attached to this bid form.

Signature(s): _____ Title: _____

_____ Title: _____

Legal Name of Firm: _____

Business Address:

Telephone Number: ()

(All interlinear marks, alterations or erasures shall be initialed by the signer of the Bid Proposal)

END OF SECTION 00400

**SECTION 00410
FAMILIAL RELATIONSHIP DISCLOSURE FORM**

SWORN AND NOTARIZED FAMILIAL DISCLOSURE STATEMENT

All Vendor/Contractor(s) submitting proposals must provide familial disclosure and attach this information to the proposal. The proposal will be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the owner or key employee of the vendor submitting a proposal and any member of the Troy School Board or the Troy School Superintendent. The District will not accept a proposal that does not include this sworn and notarized disclosure statement.

The members of Troy School Board are: Nancy Philippart, Todd Milette, Paula Fleming, Ida Edmunds, Wendy Underwood, Gary Hauff and Karl Schmidt. The Troy Schools Superintendent is Dr. Barbara Fowler.

☐ **The following are the familial relationship(s):**

	<u>Owner/Employee Name</u>	<u>Related to:</u>	<u>Relationship</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

Attach additional pages if necessary to disclose familial relationships.

☐ **There is no familial relationship that exists** between the owner or key employee of the Vendor/Contractor(s) submitting a proposal and any member of the Troy School Board, or the Troy Schools Superintendent.

INDIVIDUAL/FIRM NAME _____

BY (SIGNATURE) _____

PRINTED NAME AND TITLE _____

Subscribed and sworn before me, this _____

Seal:

day of _____, 20 ____, a Notary Public

in and for _____ County, _____

(Signature)
NOTARY PUBLIC

My Commission expires _____

*CERTIFICATION OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT****Michigan Public Act No. 517 of 2012***

The undersigned, the owner, or authorized officer of the below-named Company, pursuant to the compliance certification requirement provided in Troy School District's Request For Proposal, the "RFP", hereby certifies, represents, and warrants that the Company and its officers, directors and employees, is not an "Iran Linked Business" within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the "Act"), and that in the event the Company is awarded a contract by Troy School District as a result of the aforementioned RFP, the Company is not and will not become an "Iran Linked Business" at any time during the course of performing any services under the contract.

The Company further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of Troy School District's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date the it is determined that the person has submitted the false certification.

Contractor:

Print Name of Contractor

By: _____

Its: _____

Subscribed and sworn before me, this _____ Seal:

day of _____, 20 _____, a Notary Public

in and for _____ County, _____

(Signature)
NOTARY PUBLIC

My Commission expires _____

END OF SECTION 00410

SECTION 00500 AGREEMENT

1 AGREEMENT FORM

- 1.01 The form of Agreement that will be used for Work under this Bid Package shall be AIA Document 132 Standard Form of Agreement between Owner and Contractor, CMa 2009 Edition. The above Agreement Form is included immediately behind this section.

2. GENERAL CONDITIONS OF THE CONTRACT

- 2.1. AIA 232 Document **General Conditions of the Contract for Construction, 2009 Edition** is bound within this Project Manual and is a part of the Contract Documents.

3. INSURANCE

- 3.1. The description box on the ACORD certificate must be endorsed as follows:

For Troy School District 2013 Bond Projects: Barton Malow Company, Troy School District, are added as additional insureds on the Insured's commercial general liability policy, excess liability policy, automobile liability policy, and contractor's pollution liability policy, with respect to liabilities arising out of the operations or "work" performed by or on behalf of the Insured and in accordance with all Contractor requirements for such coverage. Coverage for the additional insureds is primary and non-contributory with any other insurance available to the additional insureds, whether such other insurance is available on a primary or excess basis. Waivers of subrogation apply in accordance with Contractor requirements.

- 3.2. A sample of the Certificate of Insurance (ACORD) form at the end of this Section.

- 3.3. CM Contractor Insurance Requirements for Agency Work, PRO 15.14, shall govern this Project. A copy of these Insurance Requirements is included in this Section.

4. BOND REQUIREMENTS

4.1. PERFORMANCE BONDS AND PAYMENT BONDS

- 4.1.1. Troy School District will, require Contractor to furnish a Performance Bond and a Payment Bond, in amounts equal to the Agreement price, by a qualified surety naming both the Owner and CM as Obligees. All sureties providing bonds on this Project must be listed in the Department of Treasury's Circular 570, entitled "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" with the bond amounts less than or equal to the underwriting limitation indicated in the Circular, and/or must have an A.M. Best rating of A – VII or better. Bonds shall be duly executed by the Contractor, as principal, and by a surety that is licensed in the state in which the Work is to be performed
- 4.1.2. The Contractor shall deliver the required bonds to CM prior to execution of the Agreement. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder, at a minimum, shall submit evidence to the satisfaction of CM that such bonds will be furnished prior to commencement of on site Work. In no event may the Contractor commence on-site Work without the required bonds properly issued and delivered.
- 4.1.3. Performance Bond and Payment Bond unmodified form AIA Document or A312 (1984 Edition) must be used for this Project.
- 4.1.4. The Bidder's proposed surety must be acceptable to the Owner and CM. If, at any time, after acceptance of the Contractor's bonds, the surety fails to meet the stated criteria Contractor must, as a precondition to continuing Work and receiving further payments, replace the bonds with bonds from a surety that meets the stated criteria.
- 4.1.5. The Performance and Payment Bond penal sums (i.e., the Agreement price) must be listed as a separate line item in the schedule of values.

- 4.1.6. In the event of a Change Order, the penal sum of any required Performance and Payment Bonds shall be adjusted to equal the adjusted Contract Price. CM or Owner shall have the right to request submission of bond riders, issued by the original qualified surety, evidencing that such adjustments to the penal sum of the bonds have been accomplished. Notwithstanding the foregoing, in the next pay application after the Agreement price has been increased by twenty-five percent (25%) or more, as a condition precedent to payment, Contractor shall deliver a bond rider issued by the original qualified surety evidencing that the appropriate adjustment in penal sums has been accomplished.

END OF SECTION 00500



AIA® Document A232™ – 2009

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

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

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

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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™–2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2009, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2009, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 **The Contract Documents.** The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, the portions of the Project Manual defined as Contract Documents therein, and 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 Notice to Proceed or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

In the event of any conflict among the Contract Documents, the Contract Documents shall be construed according to the following priorities:

Highest Priority: Modifications including Changes Orders and Notices to Proceed;

2nd Priority: Owner/Contractor Agreement;

3rd Priority: Addenda, later date to take precedence;

4th Priority: The Contract Documents (other than those mentioned above) that are included in the Project Manual Sections 0 - 2000;

5th Priority: Drawings and Technical Specifications.

In the event of a conflict among the General Conditions and Supplementary Conditions, the Supplementary Conditions shall control.

§ 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 and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

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

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

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

§ 1.1.7 **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

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consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.1.9 Provide. When the word "provide," including derivatives, is used, it shall mean to fabricate properly, complete, 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 or use under the terms of the Specifications.

§ 1.1.10 Addenda. Addenda are written or graphic instruments issued prior to the execution of the Contract that modify or interpret the Bidding Documents, including the Drawings and Specifications, by additions, deletions, clarifications or corrections.

§ 1.1.11 Knowledge. The terms "knowledge," "recognize," and "discover," their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall mean that which the Contractor knows (or should know), recognizes (or should recognize) and discovers (or should discover) in exercising the care, skill, and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor exercising the care, skill and diligence required of the Contractor by the Contract Documents.

§ 1.1.12 Persistently. The phrase "persistently 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 substantial compliance with the requirements of the Contract Documents.

§ 1.1.13 Product(s). The term "Product(s)" as used in the Contract Documents refers to the materials, systems and equipment provided by the Contractor for use in the work of the Project.

§ 1.1.14 Warranty. The terms "Warranty" and "Guarantee" as used in the Contract Documents shall have the same meaning and shall be defined as "a legally enforceable assurance of satisfactory performance of a product or Work."

§ 1.1.15 Singular/Plural. Where materials, systems and equipment items are referred to in the singular, such reference shall not serve to limit the quantity required. The Contractor shall furnish quantities as required by the Contract Documents to complete the Work.

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

§ 1.1.17. Hazardous Material: "Hazardous Material" means asbestos; asbestos containing material; lead (including lead-based paint); PCB; molds; any other chemical, material, or substance subject to regulation as a hazardous material, hazardous substance, toxic substance, or otherwise, under applicable federal, state, or local law; and any other chemical, material, or substance that may have adverse effects on human health or the environment.

§ 1.1.18. Permitted Material The term "Permitted Materials" as used in the Contract Documents shall mean materials that are general supplies and equipment that have a hazardous or potentially hazardous nature and are or will be used for their intended purpose and which do not pose any significant threat of contamination to the Project site or neighboring properties.

§ 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; In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and the 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,

either or both in accordance with the Architect's interpretation. The terms and conditions of this Subparagraph 1.2.3, however, shall not relieve the Contractor of any of the obligations set forth in Paragraphs 3.2 and 3.7.

§ 1.2.1.1 On the Drawings, given dimensions shall take precedence over scaled measurements, and large-scale drawings over small-scale drawings.

§ 1.2.1.2 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. No extra charges or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference that may be found shall be submitted to the Construction Manager and Architect for resolution before proceeding with the Work.

§ 1.2.1.3 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure to the Construction Manager for approval by the Architect before making the change.

§ 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. Where responsibility for particular Work is required of the Contractor, the Contractor shall not be released from that responsibility by reason of the location of the specification or drawing information which establishes the responsibility. Thus, the Contractor shall be responsible for all Work required of him, even though that responsibility may be shown only in that portion of the documents typically pertaining to another contractor or trade.

§ 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.

§ 1.3 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.

§ 1.5 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 will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and material or equipment 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 this Project is not to be construed as publication in derogation of the Architect, or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 Transmission of Data in Digital Form

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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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 Article 4, 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 Information and Services Required of the Owner

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit. Refer to Project Manual Section 00880 – Regulatory Requirements and Section 00890 – Permits, which detail Contractor's obligations in relation to permits. The Contractor shall not be entitled to additional compensation resulting from its failure to confirm the location of the site utilities or existing structures prior to the opening of the Contractor's bid.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. Information will be furnished only to the extent it is readily available to the Owner.

§ 2.2.4 Upon written request, 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 relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.2.6 The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

§ 2.3 Owner's/Construction Manager's Right to Stop the Work

1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner or Construction Manager, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner or Construction Manager to stop the Work shall not give rise to a duty on the part of the Owner or Construction Manager to exercise this right for the benefit of the Contractor or any other person or entity. This right shall be in addition to and not in limitation of the Owner's or Construction Manager's rights under any provision of the Contract Documents.

§ 2.4 Owner's/Construction Manager'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 a seventy-two (72) hour period (or such lesser period as determined by Owner or Construction Manager in its

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discretion when grounds exist to complete the neglected or defaulted Work in a shorter time period) after receipt of written notice from the Owner or Construction Manager to commence and continue correction of such default or neglect with diligence and promptness, the Owner or Construction Manager may correct such deficiencies, without prejudice to other remedies the Owner or Construction Manager may have, and without affecting any rights of the Construction Manager or Owner as obligee under the performance and payment bonds issued for this Contract. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Construction Manager's and Architect's and their respective consultants' additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner through the Construction Manager. In the event the Owner/Construction Manager directs another entity to perform Work pursuant to this Section that otherwise is the obligation of the Contractor, including correction of safety violations, either at the Contractor's request or as a result of the Contractor's failure to perform such Work, that other entity shall charge the Contractor all costs for labor, material and equipment plus that other entity's administrative, profit and overhead costs. The Contractor shall pay that other entity within ten (10) days of the date of invoice. If not paid within ten (10) days, the Contractor authorizes the Owner to withhold that amount from the Contractor and to pay the same to that other entity from the next payment due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 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 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 plural term "Multiple Prime Contractors" refers to persons or entities who perform construction under contracts with the Owner that are administered by the Construction Manager. The term does not include the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

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

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

§ 3.1.5 These General Conditions refer to the relationship between the Owner and Contractor. As to the contract between the Contractor and its Subcontractors, the General Conditions shall be read as the Contractor having the position of the Owner and the Subcontractors having the position of the Contractor. The Subcontractors are bound to the Contractor just as the Contractor is bound to the Owner. The Subcontractor shall have all the rights, duties and obligations to the Contractor as the Contractor has rights, duties and obligations to the Owner. The Subcontractors shall agree to and accept the same responsibility to the Owner as the Contractor. In the event any failure of a Subcontractor causes any type of injury or loss to the Owner, direct or indirect, the Contractor shall be jointly and severally liable to the Owner for such injury in addition to any responsibility or liability of the Subcontractor.

§ 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.

§ 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 2.2.3, 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

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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, any member of its organization, or any of its Subcontractors, before proceeding with the Work, 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. Refer to Project Manual Section 01530 – Field Engineering and Layout, which details Contractor's responsibilities for field layout and verification.

§ 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, 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.

§ 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 make 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 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.

§ 3.2.5 Prior to submitting its bid, the Contractor shall have studied and compared the Contract Documents and shall have reported to the Architect any error, inconsistency or omission in the Contract Documents. It will be presumed that the Contractor's bid and the Contract Sum include the cost of correcting any such error, inconsistency, or omission, which could have been discovered by the exercise of reasonable diligence. Unless the Contractor establishes that such error, inconsistency or omission could not have been discovered by the exercise of reasonable diligence, the Contractor will make such corrections without additional compensation so that the Work is fully functional.

§ 3.2.6 Except as to any reported errors, inconsistencies, or omissions, and to concealed or unknown conditions defined in Subparagraph 4.7.6, by submitting its bid the Contractor represents the following:

§ 3.2.6.1 The Contract Documents are sufficiently complete and detailed for the Contractor to: (1) perform the Work required to produce the results intended by the Contract Documents; and (2) comply with all the requirements of the Contract Documents.

§ 3.2.6.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedures, and techniques necessary to perform the Work, use of materials, selection of equipment, and requirements of product manufacturers are consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to the Work; and (3) requirements of any warranties applicable to the Work.

§ 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 for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instruction concerning these matters. 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 fully and 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 written notice to the Owner, the

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Construction Manager, and the Architect and shall not proceed with that portion of the Work without further written instructions from the Architect, through the Construction Manager. The Contractor shall ensure that Suppliers, Subcontractors, and their agents and employees, perform their Work in accordance with the Contract Documents and that all products are ordered and delivered in strict accordance with the Contract Documents and that all products are ordered and delivered in strict accordance with the Schedule. The Contractor shall coordinate its Work with that of all persons or entities on the Project site. The Contractor shall be responsible for the space requirements, locations, and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations, and routing cannot be made as indicated, the Contractor shall meet with all others involved, before installation, to plan the most effective and efficient method of overall installation. A general example is equipment above corridor ceilings where ductwork, piping, conduit, lights, etc. will be installed. A thorough coordinated plan shall be used to install the equipment, to furnish proper clearances, radii of turns, locations, pipe slopes, supporting appurtenances, and access where required. Refer to Project Manual Section 001530 – Field Engineering and Layout.

§ 3.3.2 The Contractor shall be responsible to the Construction Manager and the Owner for acts and omissions of the Contractor's employees, Subcontractors, Suppliers and their agents and employees, and any entity or other persons performing portions of the Work at any tier, directly or indirectly, under a contract with the Contractor. The Contractor shall coordinate the Work of its Subcontractors engaged in construction at the Project. Whenever interference might occur, before any Work is done at the places in question, Contractor shall consult with others and shall come to agreement with them as to the exact location and level of piping, conduits, ducts and/or other Work which might cause interference. Refer to Project Manual Section 001530 – Field Engineering and Layout.

§ 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 The Contractor shall be responsible for its own, its employees' and its Subcontractors' and Suppliers' workmanship and quality of materials and every part thereof or in connection therewith against risk of any and every kind (except those covered by a Builder's Risk Policy applicable to the Project) until the final acceptance of the Work by Owner.

§ 3.3.5 Within fifteen (15) days of award of Contract, each awarded Contractor shall assemble all necessary information and data concerning its supervision and construction procedures, as identified in Project Manual Section 00200 – Instructions to Bidders. Contractor shall submit updated information from the post-bid meetings as well as the following:

§ 3.3.5.1 A schedule of values in the format and detail as the Construction Manager may require.

§ 3.3.5.2 Contractor's Project Safety Program.

§ 3.3.5.3 A complete list of all items, products and layouts for which shop drawings, brochures or samples are required; a list of each Subcontractor or Supplier; the date of planned submission and time period for fabrication and delivery to the jobsite after approval of the submission. The foregoing items will be provided on forms furnished by the Construction Manager. The Contractor shall thoroughly review the Project Manual and adhere to any additional instructions with regard to Submittals.

§ 3.4 Labor and Materials

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

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 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.

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§ 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.

§ 3.4.4 The Contractor shall only employ labor on the Project or in connection with the Work capable of working harmoniously with all trades, crafts and any other contractors and individuals associated with the Project. The Contractor shall also minimize the likelihood of any strike, work stoppage or other labor disturbance.

§ 3.4.5 If any person employed by or under the Contractor is found in the judgment of the Construction Manager or Owner to be incompetent, disorderly, unfaithful, disobedient so far as to endanger proper fulfillment of the Contract or otherwise objectionable, such person shall, if directed by the Construction Manager, be discharged immediately and not employed again on any part of the Work without any liability to Owner or Construction Manager for such discharge.

§ 3.4.6 The Contractor agrees that neither it nor its Subcontractors will discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to hire, tenure, conditions or privilege or employment, or any matter directly or indirectly related to employment, because of race, age, sex, color, religion, national origin, ancestry or physical disability. Breach of this covenant may be regarded as a material breach of this Contract.

§ 3.5 Warranty

§ 3.5.1 In addition to any other warranties, guarantees or obligations set forth in the Contract Documents or applicable as a matter of law and not in limitation of the terms of the Contract Documents, the Contractor warrants and guarantees that:

- 1 The Owner will have good title to the Work, and all materials and equipment incorporated into the Work unless otherwise expressly provided in the Contract Documents, will be new;
- 2 The Work and all materials and equipment incorporated into the Work will be free from all defects, including any defects in workmanship or materials;
- 3 The Work and all equipment incorporated into the Work will be fit for the purpose for which they are intended;
- 4 The Work and all materials and equipment incorporated into the Work will be merchantable; and
- 5 The Work and all materials and equipment incorporated into the Work will conform in all respects to the Contract Documents.

Upon notice of the breach of any of the foregoing warranties or guarantees or any other warranties or guarantees under the Contract Documents, the Contractor, in addition to any other requirements in the Contract Documents, will commence to correct such breach within seventy-two (72) hours after written notice thereof and thereafter will correct such breach to the satisfaction of the Owner; provided that if such notice is given after final payment hereunder, such seventy-two (72) hour period shall be extended to seven (7) days. The foregoing warranties and obligations of the Contractor shall survive the final payment and/or termination of the Contract. This warranty is not limited by the provisions of Paragraph 12.2 or any other provision of the Contract Document.

§ 3.5.2 ALL WRITTEN WARRANTIES REQUIRED BY THE CONTRACT DOCUMENTS SHALL INCLUDE LABOR AND MATERIALS AND SHALL BE SIGNED BY THE MANUFACTURER OR SUBCONTRACTOR RESPECTIVELY, AND COUNTERSIGNED BY THE CONTRACTOR. ALL WARRANTIES SHALL BE ADDRESSED TO THE OWNER AND DELIVERED TO THE ARCHITECT THROUGH THE CONSTRUCTION MANAGER UPON COMPLETION OF THE PROJECT AND BEFORE OR WITH THE SUBMISSION OF REQUEST FOR FINAL PAYMENT.

§ 3.5.3 The Contractor agrees to assign to the Owner at the time of final completion of the Work any and all manufacturer's warranties relating to materials and labor used in the Work and further agrees to perform the Work in such a manner so as to preserve any and all such manufacturer's warranties.

§ 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

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merely scheduled to go into effect. The Contractor shall pay all state and federal taxes levied on its business, income or property and shall make all contributions for social security and other wage or payroll taxes. The Contractor shall be solely responsible for such payments and shall indemnify the Owner and Construction Manager and hold them harmless from same.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the 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 that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. Refer to Project Manual Section 00880 – Regulatory Requirements and Project Manual Section 00890 – Permits for a description of Contractor's obligations in relation to Permits.

§ 3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules and regulations and lawful orders, and all other requirements of public authorities bearing on performance of the Work. The Contractor shall procure and obtain all bonds required of the Owner or the Contractor by the municipality in which the Project is located or by any other public or private body with jurisdiction over the Project. In connection with such bonds, the Contractor shall prepare all applications, supply all necessary backup material, and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay all charges for all approvals for street closing, parking meter removal and other similar matters as may be necessary or appropriate from time to time for the performance of the Work.

§ 3.7.3 If the Contractor performs Work 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 Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor in writing, stating the reasons. If the Contractor disputes the determination or recommendation, the Contractor shall proceed as provided in Article 15. The Contractor shall be alert to any indication or evidence of existing underground or concealed utilities or structures not shown on the Contract Documents and shall immediately notify the Owner of discovery of such evidence. If the Contractor encounters such utilities or structures, it shall cease operations immediately to minimize damage and shall notify the Owner and Architect. The Contractor shall bear the cost of damage resulting from its failure to exercise reasonable care in its construction activity or from continuing operations without notifying the Owner. No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's prior inspections, tests, reviews, and preconstruction services for the Project, or inspections, tests, reviews, and preconstruction services that the Contractor had the opportunity to make or should have performed in connection with the Project in the exercise of the care and skill required of the Contractor by 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

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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 may be made as provided in Article 15.

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 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.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and Architect through the Construction Manager, the name and qualifications of a proposed superintendent. The Construction Manager may reply within a reasonable amount of time to the Contractor in writing stating (1) whether the Owner, the Construction Manager, or the Architect has reasonable objection to the proposed superintendent or (2) that any of them require additional time to review.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's/Construction Manager's consent, except with another superintendent who is satisfactory to the Owner/Construction Manager. The Contractor shall maintain order and discipline among all workers involved in the Project at all times. The superintendent shall be present at the Project site at all times when Work is performed by the Contractor or its Subcontractors.

§ 3.10 Contractor's Construction Schedules

§ 3.10.1 The Contractor, promptly, and within the time set forth in Project Manual Section 00230 – Schedule and Phasing, after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and the Construction Manager's approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project schedule, and within the time set forth in Project Manual Section 00230 – Schedule and Phasing, and shall provide for expeditious and practicable execution of the Work. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Multiple Prime Contractors or the construction or operations of the Owner's own forces. Refer to Project Manual Section 00230 – Schedule and Phasing.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter update it as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Construction Manager's and Architect's approval. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract

Sum or extension of Contract Time based on the time required for review of submittals. Refer to Project Manual 01330 – Submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager and Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule. Refer to Project Manual Section 00230 – Schedule and Phasing.

§ 3.10.4 In the event the Construction Manager or Owner determines that the performance of the Work, as of a Milestone Date, has not progressed or reached 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) supplying additional manpower, equipment and facilities; and (3) other similar measures (referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Construction Manager or Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the schedule. Failure to order Extraordinary Measures shall not excuse late completion.

§ 3.10.4.1 The Contractor shall not be entitled to an adjustment in the Contract Sum in connection with Extraordinary Measures required by the Construction Manager or Owner under or pursuant to this Subparagraph 3.10.4.

§ 3.10.4.2 The Construction Manager or Owner may exercise the rights furnished the Owner under or pursuant to this Subparagraph 3.10.5 as frequently as the Construction Manager or Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

§ 3.10.5 The Construction Manager or Owner shall have the right to direct a postponement or rescheduling of any date or time for the performance of any part of the Work that may interfere with the operations of other contractors or of the Owner's premises or any of the Owner's tenants or invitees. The Contractor shall, upon the Construction Manager's or Owner's request, schedule any portion of the Work affecting other contractors or other operation of the premises during hours when the premises are not in operation. Any postponement, rescheduling, or performance of the Work under this Subparagraph 3.10.6 may be grounds for an extension of the Contract Time, if permitted under Paragraph 8.3, and an equitable adjustment in the Contract Sum if (1) the performance of the Work was properly scheduled by the Contractor in compliance with the requirements of the Contract Documents, and (2) such rescheduling or postponement is required for the convenience of the Owner.

§ 3.10.6 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager and Architect and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These documents shall be available to the Architect and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed. The Contractor shall advise the Construction Manager on a current basis of all changes in the Work made during construction. Refer to Project Manual Section 01320 – Communications, Section 01700 – Contract Close Out, and Section 01720 – Project Record Documents.

§ 3.12 Shop Drawings, Product Data and Samples

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

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work. The Contractor shall review the manufacturer's instructions, and where conflict occurs between the Drawings or Specifications and the manufacturer's instructions, the Contractor shall request clarification from the Architect prior to commencing the Work.

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

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.9 through 4.2.11. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 Within seven (7) days after award of Contract, the Contractor shall submit to Construction Manager a submittal register as set forth in Project Manual, Section 01330 – Submittals. The Contractor shall review for compliance with the Contract Documents, approve and submit to the Construction Manager, and in a manner calculated to cause no delay in Contractor's Work or the Work of Owner or other contractors, Shop Drawings, Product Data, Samples, brochures and similar submittals required by the Contract Documents in accordance with the Project submittal schedule approved by the Construction Manager and Architect, or in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Multiple Prime Contractors or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Multiple Prime Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed and approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Construction Manager's or Architect's review or approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Construction Manager's or Architect's review or approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or

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certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents. Refer to Project Manual Section 01330 – Submittals and Architect's technical specifications for specific instructions regarding Contractor's submittal requirements.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

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

§ 3.13.3 Only materials and equipment that are to be used directly in the Work shall be brought and stored on the Project Site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project Site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage and all other adversity is solely the Contractor's responsibility.

§ 3.13.4 The Contractor and any entity the Contractor is responsible for shall not erect any sign on the Project site without the Owner's prior written consent, which may be withheld in the Owner's sole discretion.

§ 3.13.5 The Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials, and equipment. Without limitation of any other provision of the Contract Documents, the Contractor shall minimize any interference with the occupancy or beneficial use of any areas in buildings adjacent to the site of the Work or the premises in the event of partial occupancy, as more specifically described in Paragraph 9.9.

§ 3.13.6 The Contractor shall not permit any workers to use any existing facilities at the Project site, including without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site, as amended from time to time. The Contractor shall immediately notify the Construction Manager and Owner in writing if during the performance of the Work the Contractor finds compliance with any portion of such rules and regulations to be impracticable. The Contractor's notice shall set forth the specific issues with such compliance and suggest alternatives under which the same results intended by the rules and regulations may be achieved. The Owner may in such a circumstance, in the Owner's sole discretion, adopt such suggestions, develop new alternatives, or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project site. Refer to Project Manual Section 01140 – Use of Premises, for a complete description of Contractor's obligations regarding use of the site.

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§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

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

§ 3.14.3 See Project Manual Section 01540 as well as technical specifications for further requirements.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove 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, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor. Refer to Project Manual Section 01550 – Cleaning Up and Final Cleaning.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager and Architect 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 indemnify, defend and hold harmless the Owner, Construction Manager and Architect from any and all cost, damage and loss on account thereof, including but not limited to actual attorney's fees, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner, Architect, or Construction Manager. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect through the Construction Manager. The review by the Owner, Construction Manager or Architect of any method of construction, invention, appliance, process, article, device or materials of any kind shall be for its adequacy in the Work and shall not be an approval for the use thereof by the Contractor in violation of any patent or other rights of any third person.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, Architect and Construction Manager, and their respective agents, representatives, employees, officers, directors, affiliates, and successors (collectively, "Indemnitees") from and against any and all claims, demands, liabilities, causes of action, costs and expenses, or other dispute resolution expenses, including attorney fees and litigation expenses (collectively "Indemnification Claims"), involving:

- (a) Personal injury or death of any person;
- (b) Property damage (including loss of use);
- (c) The breach of any provision in the Owner – Contractor Agreement or Contract;
- (d) Money or other claims by subcontractors, suppliers, their employees or any entity involved in the Work at any tier;
- (e) Any contractual duty of an Indemnitee to indemnify another person; or
- (f) The enforcement by an Indemnitee of its rights under this provision;

but only if such Indemnification Claims arise from or related directly or indirectly to the Work under the Contract by, or the acts of omissions of: (i) the Contractor; (ii) its Subcontractors, Vendors or Suppliers at any tier, or (iii) any persons for whom any of them are responsible, including their employees, agents, officers or representatives. In any event, the obligations contained in Subparagraph 3.18.1 shall not apply to an Indemnification Claim resulting from the sole negligence of an Indemnitee.

§ 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 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 In the event that any claim is made or asserted, or lawsuit filed for damages or injury arising out of or resulting from the performance of the Work, whether or not the Owner, Architect or Construction Manager is named as a party, the Contractor shall immediately advise the Owner, Architect and Construction Manager, in writing, of such claim or lawsuit, and shall provide a full and complete copy of any documents or pleadings relating thereto, as well as a full and accurate report of the facts involved.

§ 3.18.4 An Indemnitee, at its option, may select counsel to defend any claim, cause of action or lawsuit brought against it without impairing any obligation of Contractor to provide indemnification.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 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.

§ 4.1.2 The Owner shall retain a construction manager lawfully licensed to practice construction management or an entity lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Contract and is referred to throughout the Contract Documents as if singular in number. All instructions to the Contractor shall be forwarded through the Construction Manager.

§ 4.1.2.1 The Construction Manager shall act as the Owner's agent for purposes of administering and enforcing the Contract.

§ 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, Architect and Contractor. Consent shall not be unreasonably withheld.

§ 4.1.4 If the employment of the Construction Manager or Architect is terminated, the Owner shall employ a successor construction manager or architect.

§ 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 reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner and Construction Manager (1) known deviations from the Contract Documents and from the most recent Project schedule prepared by the Construction Manager, and (2) defects and deficiencies observed in the Work.

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§ 4.2.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner reasonably informed of the progress of the Work, and will report to the Owner and Architect (1) known deviations from the Contract Documents and the most recent Project schedule, and (2) defects and deficiencies observed in the Work.

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

§ 4.2.5 The Construction Manager and Architect will not have control over, or charge of, 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. The Architect, the Owner and the Construction Manager shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so that the Owner, Architect and the Construction Manager may perform their functions under the Contract Documents.

§ 4.2.6 **Communications Facilitating Contract Administration.** Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Construction Manager, and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Multiple Prime Contractors shall be through the Construction Manager and shall be contemporaneously provided to the Architect if those communications are about matters arising out of or related to the Contract Documents. Communications by and with the Owner's own forces shall be through the Owner.

§ 4.2.7 The Construction Manager and Architect will review and certify 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. The Construction Manager shall determine in general whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of known defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, upon written authorization of the Owner, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 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, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 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. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed them for conformance with the submittal requirements of Contract Documents. 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.

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§ 4.2.10 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.

§ 4.2.11 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 or any other obligations set forth in the Contract. The Construction Manager and Architect's review shall not constitute approval of safety precautions, 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.

§ 4.2.12 The Construction Manager will prepare Change Orders and Notices to Proceed.

§ 4.2.13 The Construction Manager and the Architect will take appropriate action on Change Orders or Notices to Proceed 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.

§ 4.2.14 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.

§ 4.2.15 The Construction Manager will assist the Architect in conducting inspections to determine the 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 and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

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

§ 4.2.17 The Architect will interpret 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.

§ 4.2.18 Interpretations 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, 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.

§ 4.2.19 The Owner's interpretations on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.20 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect. The Architect will review and respond in writing to the Construction Manager to requests for information about the Contract Documents. 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 Multiple Prime Contractors or subcontractors of other Multiple Prime Contractors. The term "Subcontractor" shall also include material and equipment suppliers, which may also be called "Supplier". Each and every Subcontractor shall be understood to have named the Owner and Construction Manager as a third party beneficiary to its subcontract with Contractor and the Owner and Construction Manager shall enjoy all third party beneficiary rights permitted by law.

§ 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 Within seven (7) days after award of the Contract, the Contractor shall submit in writing to the Construction Manager, for review by the Owner, Architect and Construction Manager, (1) the name, trade and subcontract amount for each Subcontractor and (2) the names of all persons or entities proposed as manufacturers of the products identified in the Specifications (including those who are to furnish materials or equipment fabricated to a special design) and, where applicable, the name of the installing Subcontractor. The Construction Manager will promptly reply to the Contractor in writing stating whether or not the Owner, Construction Manager or Architect, after due investigation, has reasonable objection to any such proposed person or entity.

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

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. The Contract Sum shall be amended by either of the following at the Owner's sole discretion: (1) the difference between the subcontract amount proposed by the person or entity recommended by the Contractor and the subcontract amount proposed by the person or entity accepted or designated by the Owner and the Construction Manager; or (2) the amount by which the subcontract amount proposed by the person or entity accepted or designated by the Owner and Construction Manager exceeds the amount set forth in the Schedule of Values that is applicable to the Work covered by such subcontract. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution. The Contractor shall notify the Owner, the Architect and the Construction Manager of any proposed Subcontractor substitution a minimum of 10 (ten) days prior to such proposed change.

§ 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, and to assume toward the Contractor all the obligations and responsibilities, including responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner, Construction

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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.

§ 5.4 Contingent Assignment of Subcontracts

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

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

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 If the Work in connection with a subcontract has been suspended for more than thirty (30) days after termination of the Contract by the Owner pursuant to Paragraph 14.2 or Paragraph 14.4 and the Owner accepts assignment of such subcontract, the Subcontractor's compensation shall be equitably adjusted for any increase in direct documented costs necessarily incurred by such subcontractor as a result of the suspension. In no event will such an adjustment include any consequential damages or indirect costs such as extended home office overhead or lost profit.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity.

§ 5.5 Contractor and Subcontractors' Warranty Acknowledgement. The Contractor shall execute and deliver to the Owner, and shall cause anyone giving warranties that is contractually bound to the Contractor to execute and deliver to the Owner, the following Warranty Acknowledgement before a Certificate of Final Completion is issued:

Warranty Acknowledgement

(Name of Subcontractor) ("Subcontractor") warrants that all of its Work complies with requirements of the Contract Documents. If, within the time period Contractor is responsible for warranties under the Contract Documents, any of Subcontractor's Work is found to be not in accordance with the requirements of the Contract Documents, Subcontractor shall correct the Work and its sole expense promptly after receipt of written notice from the Owner.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, which may include persons or entities under separate contracts not administered by the Construction Manager. The Owner further reserves the right to award other contracts in connection with other portions of the Project or other construction or operations on the site. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents and any time extension or adjustment in Contract Sum will be governed by the applicable provisions of the Contract. The Contractor shall be responsible for coordination the Work with the work of the other Contractors, including the Owner's own forces or separate contractors, so as to complete the Work in accordance with the Project time schedule.

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

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

§ 6.2 Mutual Responsibility

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

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

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

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor causes to completed or partially completed construction or to property of the Owner, Construction Manager, separate contractors, or other Multiple Prime Contractors as provided in Section 10.2.5. Should a claim be made that the Contractor wrongfully delayed or caused damage to the Work or property of another contractor, the Contractor shall promptly settle the dispute with such other contractor. If a separate contractor sues the Construction Manager or Owner on account of any delay or damage alleged to have been caused by the Contractor, the Construction Manager will notify the Contractor who shall defend such proceedings at the Contractor's sole expense. If any judgment or award against the Construction Manager or Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Construction Manager or Owner for all costs, including attorney's fees and court costs which either may have incurred.

§ 6.2.5 The other Multiple Prime 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, other Contractors and the Construction Manager and/or the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Section 3.15, the Owner or Construction Manager may clean up and allocate the cost among those responsible as the Construction Manager, in consultation with the Architect, determines to be just. The Owner's right to clean up shall in no event be deemed a duty, and should the Owner choose not to pursue this remedy, the Contractor necessitating such action shall remain fully responsible for the same. Refer to Project Manual Section 01550 – Clean Up and Final Cleaning.

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, Notice to Proceed, written contract amendment, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Refer to Project Manual Section 01250 – Changes in the Work.

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

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and Contractor shall proceed promptly, unless otherwise provided in the Change Order, Notice to Proceed or order for a minor change in the Work. Except as permitted in paragraph 7.3, an increase 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 any alteration or addition to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any claim for an increase in any amounts due under the Contract Documents or for a change in any time period provided for in the Contract Documents.

§ 7.2 Change Orders

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

- .1 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.

§ 7.2.2 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. Any impact such change may have on the unchanged Work, including but not limited to claims for acceleration, stacking, inefficiency, ripple effect, disruption, compression, interference, delay and cumulative impact, and any and all adjustments to the Contract Sum and the Schedule. In the event a Change Order increases the Contract Sum, the Contractor shall include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents.

§ 7.3 Notice To Proceed

§ 7.3.1 A Notice to Proceed 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 Notice to Proceed, 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 Notice to Proceed shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Notice to Proceed 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 7.3.7.

However, the contract time shall be adjusted only if the Contractor demonstrates to the Owner and Construction Manager that the changes in the Work required by the Notice to Proceed adversely affect the critical path of the Work.

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

§ 7.3.5 Upon receipt of a Notice to Proceed, the Contractor shall promptly proceed with the change in the Work involved

§ 7.3.6 A Notice to Proceed 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.

(Paragraphs deleted)

§ 7.4 Minor Changes in the Work

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

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 knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. All Work shall be completed in sufficient time to allow for clean-up and preparation for Owner move-in prior to the date of Substantial Completion of the Work.

§ 8.2.4 Without altering the applicability and obligations of Section 8.2.3, the Contractor shall prosecute the Work undertaken in a prompt and diligent manner wherever such Work, or any part of it, becomes available, or at such other times as the Owner and/or Construction Manager may direct so as to promote the general progress of the entire construction. The Contractor shall not, by delay or otherwise, interfere with or hinder the Work of any other contractor, the Owner, Construction Manager or the Architect. Any supplies, materials, tools and/or equipment that are to be furnished by the Contractor hereunder shall be furnished in sufficient time to enable the Contractor to perform and complete its Work within the time or times provided for herein. If the Contractor, through its negligence or failure, including the negligence or failure of its Subcontractors or suppliers, thus to furnish the necessary labor and/or supplies, materials, tools and/or equipment to meet construction needs in accordance with the established Schedule, then it shall increase its forces or work such overtime as may be required, at its own expense, to bring its part of the Work up to the proper schedule. In the event the Contractor fails to take such action necessary to bring its part of the Work up to schedule within twenty-four hours of receiving notice from the Owner or Construction Manager, then the Owner, at its sole option, may supplement the Contractor's forces, materials and/or equipment or remove the Contractor from the Project, and the Owner may complete part or all of the remainder of the Contractor's Work, either utilizing in the Owner's sole discretion its own forces, new contractors chosen by the Owner or any Subcontractor or supplier of the Contractor, which may include fixed price supplemental work time and materials supplemental work, or any combination thereof, which in Owner's sole discretion will most quickly and completely cure the failure of the Contractor. The Contractor shall be responsible for any and all costs of

performing or completing the Work that are incurred by the Owner or any Contractor, Subcontractor, Supplier, or other entity on the Owner's behalf. The Contractor shall pay the Owner for such costs within ten (10) days of the date of demand. If not paid within ten (10) days, the amount will be withheld from the Contractor and paid to the Owner from the next payment due the Contractor under the Contract. Exercise of such rights shall in no way limit or jeopardize the Owner's right to any other remedy, including but not limited to, a claim against the Performance Bond of the Contractor.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner's own forces, Construction Manager, Architect, any of the other Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, adverse weather conditions not reasonably anticipated, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending litigation, or by other causes which the Construction Manager determines may justify delay, then the Contract Time shall be extended by Change Order to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract Time and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay is not caused, or could not have been anticipated or prevented by the Contractor, could not be limited or avoided by the Contractor's timely notice to the Owner of the delay, and is of a duration not less than one (1) day.

§ 8.3.2 Any claim for extension of time shall be made in writing to the Construction Manager in the manner and time specified by Paragraph 4.7; otherwise it shall be waived. In the case of a continuing delay only one claim is necessary. The Contractor shall provide a written estimate of the probable effect of such delay on the progress of the Work.

§ 8.3.3 Notwithstanding anything to the contrary in the Contract Documents, an extension in the Contract Time, to the extent permitted under Subparagraph 8.3.1, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work; (2) hindrance or obstruction in the performance of the Work; (3) loss of productivity or acceleration; or (4) other similar claims (collectively referred to in this Subparagraph 8.3.3 as "Delays") whether or not such Delays are foreseeable, unless a Delay is caused by the Owner's active interference with the Contractor's performance of the Work, and only to the extent such acts continue after the Contractor furnishes the Owner with notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including without limitation, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the Work.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

§ 9.2 Schedule of Values

The Contractor shall submit to the Construction Manager, within seven (7) days after award of contract, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner, Construction Manager or

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Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents. See Project Manual Section 01290 – Payment Procedures for Contractor's obligations in relation to Applications for Payment.

§ 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 Notice to Proceed, or by interim determinations of the Construction Manager and Architect, but not yet included in 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 material supplier unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 The Contractor shall provide supporting data substantiating the Contractor's right to payment as the Owner, Architect and Construction Manager may require.

§ 9.3.2 Payment will not be made on account of materials or equipment stored on or off site unless the requirements set forth in Project Manual Section 01290 regarding materials stored off site are met to the satisfaction of Construction Manager and Owner.

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

§ 9.3.3.1 The Contractor further expressly undertakes to defend, indemnify and hold harmless the Indemnitees, at the Contractor's sole expense, against any actions, lawsuits, or proceedings brought against the Indemnitees as a result of Liens filed against the Work, the site of the Work, the Project site and any improvements on it, payments due the Contractor, or any portion of the property of any of the Indemnitees. The Contractor agrees to defend, indemnify and hold the Indemnitees harmless from and against any such Liens and agrees to pay any judgment resulting from any such actions, lawsuits, or proceedings.

§ 9.3.3.2 The Owner shall release any payments withheld due to a Lien if the Contractor obtains security acceptable to the Owner or a lien bond that is (1) issued by a surety acceptable to the Owner that is licensed and admitted in the state; (2) in form and substance satisfactory to the Owner; and (3) in an amount not less than One Hundred Fifty Percent (150%) of such Lien. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under this Paragraph 9.3, including, without limitation, the duty to defend and indemnify the Indemnitees. The cost of any premiums incurred in connection with such bonds and security shall be the Contractor's responsibility and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.3.3 Notwithstanding the foregoing, the Owner reserves the right to settle any disputed Lien by making payment to the lien claimant or by such other means as the Owner, in the Owner's sole discretion, determines is the most economical or advantageous method of settling the dispute. The Contractor shall promptly reimburse Owner, upon demand, for any payments so made.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, after the receipt of the Project Application for Payment with the recommendations of the Construction Manager, review the Project Application for Payment and will either issue a Project Certificate for Payment to the Owner with a copy to the Construction Manager for such amounts as the Architect determines are properly due, or notify the Construction Manager and Owner in writing of the reasons for withholding a Certificate as provided in Subparagraph 9.5.1. Such notifications will be forwarded to the Contractor by the Construction Manager.

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

(Paragraphs deleted)

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate 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 Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- .1 defective 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 for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner, Construction Manager or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents;
- .8 or any other default or breach under the Contract Documents.

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

§ 9.5.3 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager and both will reflect such payment on the next Certificate for Payment.

§ 9.5.4 Should the Subcontractor be in debt to the Owner for any reason, whether in connection with this Contract or a separate contract on this, or another Project, then Owner shall have the right to apply funds from this Contract against the debt owed.

§ 9.5.5 If the Contractor disputes any determination by the Owner, Architect, or Construction Manager with regard to any Certificate for Payment, the Contractor shall nevertheless continue to expeditiously perform the Work and such dispute shall provide no basis for any manner of suspension of the Contractor's performance of the Work.

§ 9.6 Progress Payments

§ 9.6.1 The Owner shall either forward payments for the preceding month's Work to the Contractor directly, or forward payments for the preceding month's Work to the Construction Manager for distribution to Contractors. As agent of the Owner, Construction Manager shall forward payment to Contractor following verification of Owner's disbursement checks.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner or Construction Manager 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.

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

§ 9.6.4 Neither the Owner, Construction Manager nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law. However, if either Owner, Construction Manager or Architect has cause for concern of whether all payments have been made or will be made as required to subcontractors, laborers or suppliers or creditors of the Subcontractor, Owner, Construction Manager or Architect, in their sole discretion, and without limiting other remedies, after seventy-two (72) hours notice to Contractor, have the right to issue payments either by joint check, payable to both Contractor and the subcontractor, laborer, supplier or creditor, or directly to the subcontractor, laborer, supplier or creditor. Such payments shall be applied against the Contract Sum to the same extent as if the payment were made solely to the Contractor. The Owner's, Construction Manager's or Architect's rights to issue joint checks or direct payments shall in no event create an obligation on the part of the Owner, Construction Manager or Architect to exercise this right on behalf of a subcontractor, laborer, supplier or creditor.

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

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

§ 9.6.7 Payments received by the Contractor for Work properly performed by Subcontractors and 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.

§ 9.6.8 Subject to applicable law, if a petition in bankruptcy or any other arrangement or proceeding regarding insolvency, assignment for the benefit of creditors, trust, chattel mortgage, or similar state or federal proceeding, whether voluntary or involuntary, shall be filed with respect to the Contractor, the Owner may withhold the final balance, or any other payments, whether or not an application for progress payment has been properly filed, until expiration of the period of any guarantee or warranties required for the contractor, and the Owner may pay out such funds the amount necessary to satisfy any claims or costs that otherwise would have been covered by such guarantee or warranties.

§ 9.7 Failure of Payment

§ 9.7.1 If the Construction Manager should fail to issue recommendations within fourteen (14) days of receipt of the Contractor's Application for Payment, or if, through no fault of the Contractor, the Architect does not issue a Project Certificate for Payment within fourteen (14) days after the Architect's receipt of the Project Application for Payment, or if the Owner does not pay the Contractor within fourteen (14) days after the date established in the Contract Documents any amount certified by the Architect or awarded by litigation, then the Contractor may, upon

fourteen (14) additional days' written notice to the Owner, the Architect and the Construction Manager, stop Work until payment of the amount owing has been received. The Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

§ 9.7.2 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner, or issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 9.8 Substantial Completion

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

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect through the Construction Manager a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit through the Construction Manager a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. In no case shall the Contractor's final completion of the Work and contract closeout (see Project Manual Section 01700 - Contract Closeout) exceed sixty (60) days from the date of issuance of the Certificate of Substantial Completion. In the event Contractor fails to complete the Work within the sixty (60) day period, the Owner may, in addition to all of its other rights and remedies under the Contract and at law and/or equity, complete the Contractor's Work at the sole expense of Contractor. Owner shall be entitled to deduct from the final payment all costs and expenses incurred in completing the Work, including additional Construction Management and Architecture fees and costs. In the event the costs exceed the amounts being withheld by Owner for final payment, the Contractor or its surety shall make the excess payment within five (5) days of demand by the Owner.

§ 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 requirements of 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, through the Construction Manager, a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work or designated portion thereof is substantially complete, the Architect will prepare, and the Construction Manager and Architect shall execute a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 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 such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such 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 reserves the right to occupy the whole or any portion of the premises at any time prior to completion of the Work provided such occupancy or use is consented to by the insurer as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. It is understood and agreed that the right to use the premises is part of the Contract and the Contractor has taken this possibility into account when preparing its bid, and that the Contractor shall proceed with the Work in such a manner as may be directed and shall cooperate with the Owner to limit interruptions to the Owner's routine operations. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect, through the Construction Manager, as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

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

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

§ 9.9.4 Any agreement as to the acceptance of non-conforming Work not complying with the requirements of the Contract Documents, shall be in writing in the form of a Change Order, acceptable to the Owner's authorized representative and signed by all parties.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager will evaluate the completion of Work of the Contractor and then forward the notice and Application, with the Construction Manager's recommendations, 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 Certificate for Payment or Project Certificate 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 terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. All warranties and guarantees and specified closeout documents required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Construction Manager as part of the final Application for Payment (Refer to Project Manual Section 01700 – Contract Closeout, Section 01720 – Project

Record Documents, Section 01730 – Operations and Maintenance Data, Section 01740 – Warranties and Guarantees, and Section 01750 – Systems Demonstration, Training and Start Up). The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees and other specified closeout documentation have been received and accepted by the Owner.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or Construction Manager or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner or Construction Manager, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner or Construction Manager. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner and Construction Manager to indemnify the Owner and Construction Manager against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner and/or Construction Manager all money that the Owner and/or Construction Manager may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees, (6) an affidavit that states the Work is fully completed and performed in accordance with the Contract Documents and is satisfactory to the Architect and the Owner, (7) in the event of Contractor bankruptcy, at the Owner's option, an order entered by the court having jurisdiction of the Contractor's insolvency proceeding authorizing such payment, (8) a general release executed by the Contractor on a form provided by the Construction Manager.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents;
- .4 Owner's claims arising after payment;
- .5 claims for indemnification; or
- .6 claims about which the Owner has previously given notice to the Contractor.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or Supplier shall constitute a waiver of all claims by that payee against Owner, Architect, and Construction Manager except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. If Contractor fails to submit a final Application for Payment or a final conditional waiver within a reasonable time after request by Construction Manager, and in no event later than sixty (60) days after the issuance of the Certificate of Substantial Completion, the Owner and Construction Manager may unilaterally determine the balance due to the Contractor and the Contractor shall be bound by such determination.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be solely responsible to the Owner and Construction Manager 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 control over or charge of the acts or omissions of the Contractors, Subcontractors, Suppliers, agents or employees of the Contractors or Subcontractors or Suppliers, or any other persons performing portions of the Work, as these obligations are the sole responsibility of the Contractor. Contractor shall be responsible for payment of all fines levied against Owner, Architect or Construction Manager and all costs (including attorney's fees and litigation/dispute resolution costs) incurred as a result of such fines arising from or relating to conduct of Contractor's Work.

§ 10.2 Safety of Persons and Property

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

- .1 all employees involved in the Project and all other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
- .3 other property at the site or adjacent thereto, such as, but not limited to, 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, Construction Manager, or other Contractors.

§ 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.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, all necessary or appropriate safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities. 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 damages to such property or improvements shall be promptly repaired by the Contractor. Without limiting the indemnity provisions elsewhere in the Contract Documents, the Contractor shall defend, indemnify and hold harmless the Owner and Construction Manager from and against any and all actions or damages arising out of or resulting from damage to such property or improvements.

§ 10.2.4 Use of explosives is not permitted. When use or storage of hazardous substances or equipment, or unusual construction methods are necessary, Contractor shall give Owner, Construction Manager and Architect reasonable advanced notice. When driving or removing piles, wrecking, performing excavation work or other similar potentially dangerous work, the Contractor shall provide protection and exercise utmost care, under supervision of properly qualified personnel, so as not to endanger life or property. Contractor is fully responsible for any and all damages, claims and for defense of all actions against Owner, Construction Manager and Architect resulting from prosecution of such work in connection with or arising out of the Contract.

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

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

§ 10.2.7 The Contractor shall not load or permit any part of the structure or site to be loaded with a weight that will endanger the structural integrity of the structure or site or the safety of workmen or any other persons on or about the

Work. When required law or for the safety of the Work, the Contractor shall shore up, brace, underpin, and protect foundations and other portion or existing structures that re in any way affected by the Work. Before commencement of any part of the Work, the Contractor shall serve any and all notices required to be given to adjoining land and/or property owners or other parties.

§ 10.2.8 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause.

(Paragraph deleted)

§ 10.2.9 The Contractor shall promptly report by telephone and in writing to the Owner, Construction Manager and Architect all accidents arising out of or in connection with the Work that cause death, personal injury, or property damage, giving full details and observations of any witnesses. See Project Manual Section 00810 – Safety Program

§ 10.2.10 Injury or Damage to Person or Property

If Contractor suffers injury or damage to person or property because of an act or omission of the Owner, or of others for whose acts the Owner is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the Owner 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. The Contractor's failure to do so shall be an irrevocable waiver of any claim against the Owner arising out of such injury or damage. Injury or damage to persons or property suffered by the Owner because of an act or omission of the Contractor or others for whose acts the Contractor is legally responsible shall be subject to the limitations provisions established by Michigan law. § 10.3

Hazardous Materials

§ 10.3.1 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB), or any other hazardous material, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner, Construction Manager and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos, polychlorinated biphenyl (PCB) or any other material deemed a Hazardous Material, and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or any other Hazardous Material, or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which litigation has not been demanded, or by litigation under Article 4. The term "rendered harmless" shall be interpreted to mean that levels of asbestos, polychlorinated biphenyls, and other Hazardous Materials are less than any applicable exposure standards set forth in OSHA regulations or other applicable state regulations. In no event, however, shall the Owner, Construction Manager or Architect have any responsibility for any substance or material that is brought to the Project site by the Contractor, any Subcontractor, any Supplier, or any entity for whom any of them is responsible. The Contractor agrees not to use any fill or other materials to be incorporated into the Work that are hazardous, toxic, or made up of any items that are hazardous or toxic. Refer to Project Manual Section 00840 – Hazardous Materials.

(Paragraphs deleted)

§ 10.3.2 The Contractor shall not, nor shall it permit any member of the construction team to bring on, keep, store, use, release or dispose of any hazardous or potentially Hazardous material on, in or about the Project site except Permitted Materials and as required by section 10.3.8., subject to the requirements of §10.3.9.

§ 10.3.3 The Contractor shall cause the presence, use, storage and/or disposal of Permitted Materials by any member of the construction team to be in strict (not substantial) compliance in every respect with all applicable laws and shall promptly notify the Owner if any amount of Permitted Materials or any other Hazardous Materials are released on the Project site at any time in a quantity that would have to be reported or remediated under any applicable laws.

.1 the Contractor shall at its expense, without recovery from the Owner, under the Contract Sum or otherwise, fully and promptly remediate each and every release of Permitted Materials and any other Hazardous Materials in full compliance with all applicable laws, to the most stringent standards available under all applicable laws, and in cooperation with the Owner, except to the extent of contamination (i) that existed before Work began at the Project site and neither the Contractor nor any other member of the construction team has exacerbated such preexisting contamination after recognizing the presence and general location of such contamination, or (ii) was caused directly by the Owner, the Architect, a separate contractor of the Owner who is not a member of the construction team, or any third party. The Contractor shall be responsible if and to the extent, after recognizing the presence and general

location of Hazardous Materials that were preexisting at the site, or after it should have recognized such presence and general location, it exacerbates such contamination.

§ 10.3.4 The Contractor shall at its expense, without recovery from the Owner, under the Contract Sum or otherwise, be solely responsible to the Indemnitees for and shall defend, indemnify and hold harmless the Indemnitees and the Project site from and against all claims, damages costs, fines, judgments and liabilities, including attorneys fees and costs, arising out of or in connection with the generation, release, transportation, storage, use, disposal or presence of Permitted Materials or Hazardous Materials at the Project site by or due to any member of the construction team or for any noncompliance with section 10.3 by any member of the construction team. The indemnity in the previous sentence and in section 10.3.4 does not include claims, damages, costs, fines, judgments or liabilities, to the extent they arise from (i) contamination that existed before Work began at the Project site which was not exacerbated by the Contractor or any member of the construction team (after it recognized or should have recognized the presence and general location of such contamination) or (ii) contamination that was caused directly by the Owner, the Architect, a separate contractor of the Owner who is not a member of the construction team, or any third party.

§ 10.3.5 The Contractor's responsibility under the foregoing indemnification shall include any and all governmentally mandated removal and/or clean up of any such Permitted Materials or Hazardous Materials.

§ 10.3.6 If the Contractor shall receive any notice, whether oral or written, of any inquiry, test, investigation, enforcement proceeding, environmental audit or the like by or against the Contractor, any member of the construction team, or the Work with regard to any permitted or Hazardous Materials at or emanating from the Project site, the Contractor shall immediately notify the Owner, Construction Manager and Architect.

§ 10.3.7 If any member of the construction team encounters on the Project site material, which it believes is a Hazardous Material in any form (other than Permitted Materials being used in an appropriate manner or asbestos, asbestos containing materials or polychlorinated biphenyl (PCBs) which have been rendered harmless), the Contractor shall (i) immediately stop Work in the area affected, (ii) report the condition to the Owner, Construction Manager and Architect as expeditiously as possible, and (iii) clear all persons from the area of exposure. The Work in the affected area shall not be resumed until the Hazardous Material has been removed or rendered harmless as evidenced by written agreement of the Owner and the Contractor. The term 'rendered harmless' shall be interpreted to mean that the levels are less than any applicable exposure standards set forth in OSHA regulations or other applicable state regulations and all applicable laws. In no event, however, shall the Owner have any responsibility for any substance or material that is brought to the Project site by any member of the construction team. Except for the Permitted Materials, no member of the construction team shall use any fill or other materials to be incorporated into the Work, which are Hazardous Materials, toxic or comprised of any items that are Hazardous Materials or toxic.

§ 10.3.8 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Construction Manager, Architect, Contractor, Subcontractors, and agents, officers, directors, affiliates and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney fees and litigation costs, arising out of or resulting from performance of the Work in an area affected by Hazardous Materials (excluding Permitted Materials and other Hazardous Materials brought to the site by the Contractor or persons for whom it is responsible and excluding all claims, damages, losses and expenses, including but not limited to attorney fees and litigation costs, arising out of or resulting from any exacerbation of preexisting contamination after the Contractor recognized or should have recognized the presence or general location of such preexisting contamination), if (i) in fact, the material presents the risk of bodily injury or death 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, but only to the extent that such damage, loss or expense is not due to the negligence of the person seeking indemnity.

§ 10.3.9 The Contractor shall not be required to cause performance without its consent any Work relating to asbestos or PCB or other Hazardous Materials, except as otherwise required under this section 10.3. The Contractor agrees to excavate and stockpile on site soils with levels of contamination such that it can be safely and lawfully handled without special protective equipment if the Owner so requests. In such a circumstance, the Contractor shall comply with all applicable laws, shall be fully responsible for any non-compliance with all applicable laws, and shall indemnify, defend and hold harmless the Owner, Architect and Construction Manager for any and all claims damages, losses and expenses, including but not limited to attorney fees and litigation costs, arising from

Contractor's failure to comply with applicable laws.

§ 10.3.10 The Contractor shall take care to minimize the use of any Hazardous Materials to the extent consistent with the orderly conduct of the Work. To the maximum extent practical, the Contractor shall cause Permitted Materials which contain Hazardous Materials (and any explosive materials which are not Hazardous Materials) to be stored off the Project site and off Owner's premises. Except for Permitted Materials, all Hazardous Materials used, stored or generated at the Project site by the construction team shall be used, stored, transported and disposed of in strict (not substantial) conformity with applicable laws, codes, rules, regulations, guidelines and orders of governmental authorities having jurisdiction. The Contractor shall maintain — and provide promptly to Owner upon demand — appropriate and complete documentation evidencing the Contractor's compliance with all such laws, codes, rules, regulations, guidelines and orders.

The Contractor shall not permit inclusion of asbestos, polychlorinated biphenyls or urea formaldehyde in any construction materials. The Contractor shall be responsible for the removal and cleanup of all Hazardous Materials and wastes brought to the Project site or generated at the pProject site by any member of the construction team. The Contractor shall indemnify and defend the Indemnitees against and hold them harmless from all claims, suits, damages, losses, fines, penalties, costs and expenses, including attorneys' fees and litigation expenses, arising from or in connection with or otherwise relating to, the use, generation, storage, release, transporting and disposal of any Hazardous Materials or waste in connection with the Work excluding such items as are Owner's responsibility as set forth in § 10.3.8.

§ 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 Liability Insurance

§ 11.1.1

(Paragraphs deleted)

Reference Project Manual Section 00500 – Insurance for the insurance provisions applicable to Contractor under this Contract.

(Paragraphs deleted)

§ 11.2 Owner's Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 Property Insurance

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the Architect's, Contractor's, and Construction Manager's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to

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commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles, unless the loss was caused Contractor or a party for whom the Contractor is responsible, in which case Contractor shall be responsible for the applicable deductibles.

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

(Paragraph deleted)

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

§ 11.3.3 **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused.

§ 11.3.4 The Owner, Architect and Construction Manager, "Barton Malow Company", shall be named as an additional insured on all property and liability policies. Refer to Project Manual 00500 – Insurance.

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

§ 11.3.6 **Waivers of Subrogation.** Reference Project Manual Section 00500 – Insurance for the insurance provisions applicable to Contractor under this Contract. § 11.3.7 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary, through the Construction Manager, and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

(Paragraph deleted)

§ 11.3.8 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.9 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such

objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement.

(Paragraph deleted)

§ 11.4 Performance Bond and Payment Bond

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract. Bonds shall be executed by a responsible surety licensed and admitted in the state where Work is located, listed in the latest version of the Department of the Treasury's Circular 570, "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies," with the bond amount less than or equal to the underwriting limitation; and with an AM Best's rating of no less than A- VII or better. Bonds shall meet all other requirements set forth in Section 0500 – Bonds - of the Project Manual.

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

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 observation and be replaced at the Contractor's expense without change in the Contract Time.

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

§ 12.2 Correction of Work

§ 12.2.1 Before or After 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, whether discovered before or after 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 any portion of the Work is determined by the Owner, Construction Manager or Architect, either during performance of the Work or during any applicable warranty period, to be defective or not in compliance with the requirements therefor, the Construction Manager or Owner shall notify the Contractor in writing that such Work is rejected. Thereupon, the Contractor shall immediately replace and/or correct such Work by making the same comply strictly with all the requirements therefor. The Contractor shall bear all costs of correcting such rejected Work, including work of other Subcontractors and including compensation for the Architect's and Construction Manager's additional services and any delay or related damaged to the Owner made necessary thereby. The Construction Manager shall have the right to charge the Contractor for any compensation payable for the Architect's or Construction Manager's additional services required by the Contractor's rejected Work and deduct the payment from the next payment due the Contractor.

§ 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 an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner or Construction Manager to do so unless the

Owner or Construction Manager has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. 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 2.4., without affecting the surety(ies) obligations under the Bonds. Refer to the Project Manual Section 01740 – Warranties and Guarantees.

§ 12.2.2.2 The one-year period 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 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, whether completed or partially completed, of the Owner or separate contractors or other Multiple Prime Contractors 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 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 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.

§ 12.2.6 Unless the Owner authorizes otherwise, Substantial Completion shall not commence the correction period for any equipment or systems that:

- .1 Are not fully operational (equipment or systems shall not be considered fully operational if they are intended to provide service to any portion of the building which the Owner has not accepted as substantially complete); or
- .2 Are not accepted by the Owner

§ 12.2.7 The Contractor shall respond immediately to correct Work deficiencies and/or punch list items. Failure to correct Work deficiencies and/or punch list items in a timely fashion shall be a material breach, and the Owner may terminate the Contract. Whether or not the Contract is terminated, if the Contractor fails to make corrections in a timely fashion, such Work may be corrected by the Owner, in its sole discretion, at the Contractor's expense and the Contract Sum may be adjusted by backcharge accordingly. The Contractor shall promptly notify the Construction Manager in writing when Work deficiencies and/or punch list items are completed. If upon review of the Work by the Construction Manager, after such notification by the Contractor, Work deficiencies and/or punch list items shall continue to exist, the Contractor shall reimburse the Owner for any costs incurred by the Owner, plus ten percent (10%) overhead and profit, as well as the Construction Manager's and Architect's fees for reinspections of 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. Acceptance of nonconforming Work may only occur pursuant to such written Change Order.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located except that, 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. The Contractor shall not assign the Contract as a whole or part without written consent of the Owner. If Contractor attempts to make such an assignment without such consent, it and its surety(ies) 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. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 Written Notice

§ 13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail or by national overnight courier service providing a tracking system and proof of delivery to the last business address known to the party giving notice. Owner or Construction Manager as Owner's Agent, may, at their option, serve notice on the Contractor by faxing a copy of the notice to the Contractor at its last known facsimile number and subsequently mailing the notice to the Contractor's last known business address.

§ 13.4 Rights and Remedies

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

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

§ 13.5 Tests and Inspections

§ 13.5.1 Tests, inspections and approvals of portions of the Work 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 (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

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

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents or applicable law, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and

compensation for the Construction Manager's and Architect's services and expenses. 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 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.

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

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

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

§ 13.6 Interest

Payments due and unpaid under the Contract Documents shall not bear interest

§ 13.7 Time Limits on Claims

The Owner shall commence all claims and causes of action in accordance with Michigan law, regardless of time frames identified in this Agreement. The Contractor shall commence all claims and causes of action in accordance with the Contract and in accordance with Michigan law.

§ 13.7.2 Regardless of any provisions to the contrary, the statute of limitations with respect to any defect or nonconforming Work which is not discovered by the Owner shall not commence until the discovery of such defective or nonconforming Work by the Owner.

§ 13.8 Except where otherwise expressly required by the terms of the Contract, exercise by the Owner of any contractual or legal right or remedy without prior notice to or approval by the Contractor's surety shall in no way bar or prohibit the Owner's ability to pursue such rights or remedy. Further, pursuit of such a right or remedy without prior notice to or approval or surety shall in no way compromise, limit or bar any claim by the Owner against a surety bond of the Contractor.

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 90 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
- .3 Because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents subject to justifiable withholding of payment as described herein or in the Contract Documents.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed

§ 14.1.4 If the Work is stopped for a period of 90 consecutive days or if repeated suspensions, delays, or interruptions by the Owner as described in Paragraph 14.3 constitute in the aggregate the lesser of an amount equal to the Contract time or One Hundred Twenty (120) days in any one (1) year period through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has 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' written 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 refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents;
- .5 is petitioned bankrupt, or makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of the Contractor's insolvency;
- .6 breaches any warranty made by the Contractor under or pursuant to the Contract Documents;
- .7 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents; or
- .8 fails after commencement of the Work to proceed continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, after consultation with the Construction Manager, and upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seventy-two (72) hours written notice, terminate employment of the Contractor and may:

- .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 made necessary thereby, and other damages incurred by the Owner in pursuing termination and completion of the Work, including actual attorney and legal fees and costs, 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 amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

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

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

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

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner reserves the right to terminate the Contract, or any portion thereof, for convenience and without cause, even though the Contractor has not failed to perform any part of the Contract. Termination of the Work hereunder shall be effected by written notice to the Contractor. Upon receipt of such notice, the Contractor shall, unless the notice otherwise directs:

- .1 Immediately discontinue the terminated portion of the Work and the placing of all orders and subcontracts in connection with the terminated portion of the Work;
- .2 Immediately cancel all of the existing orders and subcontracts in connection with the terminated portion of the Work;
- .3 Immediately transfer to the Owner all materials, supplies, Work in progress, appliances, facilities, machinery and tools acquired by the Contractor in connection with the performance of the terminated portion of the Work, and take such action as may be necessary or as the Owner or Construction Manager may direct for protection and preservation of the Work relating to this Contract; and
- .4 Deliver all plans, drawings, specifications and other necessary information to the Owner through the Construction Manager.

§ 14.4.2 If the Owner terminates the Contract for convenience, the following shall be the Contractor's exclusive remedies:

14.4.2.1 Reimbursement of all actual expenditures and costs approved by the Owner through the Construction Manager and Architect as having been made or incurred in performing the terminated Work.

(Paragraph deleted)

14.4.2.2 Reimbursement of expenditures made and costs incurred with the Owner's prior written approval in settling or discharging outstanding commitments entered into by the Contractor in performing the Contract; and

14.4.2.3 Payment of profit, insofar as profit is realized hereunder, of an amount equal to the estimated profit on the entire Contract at the time of termination multiplied by the percentage of completion of the Work. In no event shall the Contractor be entitled to anticipated fees or profits on Work not required to be performed.

§ 14.4.3 All obligations of the Contractor under the Contract with respect to completed Work, including but not limited to all warranties, guarantees, indemnities, insurance and bonds shall apply to all Work completed or substantially completed by the Contractor prior to a convenience termination by the Owner. Notwithstanding the above, any convenience termination by the Owner or payments to the Contractor shall be without prejudice to any claims or legal remedies that the Owner may have against the Contractor for any cause.

§ 14.4.4 Upon a determination that a termination of this Contract, other than a termination for convenience under this Paragraph 14.4, was wrongful or improper for any reason, such termination shall automatically be deemed converted to a convenience termination under this Paragraph 14.4, and the Contractor's remedy for such wrongful termination shall be limited to the recoveries specified under Subparagraph 14.4.2.

§ 14.4.5 Contractor is required to include a termination for convenience clause in all of its Subcontractor and Supplier contracts, in substantially similar form as set forth in this Paragraph 14.4, and that limits the Subcontractors and Suppliers to exclusive remedies no greater than those set forth in Subparagraph 14.4.2 that are available to Contractor. Contractor shall bear all costs arising or related to its failure to include such clause in its Subcontracts.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, 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 party making the Claim.

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§ 15.1.2 Notice of Claims. Claims by Contractor must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the Contractor first recognizes the condition giving rise to the Claim, whichever is later, provided, however, that the Contractor shall use its best efforts to furnish the Construction Manager, Architect, and the Owner, as expeditiously as possible, with notice of any Claim including, without limitation, those in connection with concealed or unknown conditions, as soon as such Claim is recognized. Contractor shall cooperate with the Construction Manager, Architect, and the Owner in any effort to mitigate the alleged or potential damages, delay or other adverse consequences arising out of the condition that is the cause of the Claim. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

§ 15.1.3 Continuing Contract Performance. 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. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. A Project delay shall not be a basis for a Claim for additional costs. Delays may be remedied only through an extension of time per Section 15.1.5.

§ 15.1.5 Claims for Additional Time

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

§ 15.1.5.2 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.

(Paragraphs deleted)

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial interpretation. The Architect 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 interpretation shall be required as a condition precedent to litigation of any Claim brought by the Contractor against the Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no interpretation having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not interpret 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. Within ten (10) days or written request, the Contractor shall make available to the Owner or its representative all of its books, records, or other documents in its possession or to which it has access relating to a Claim and shall require its Subcontractors and Suppliers, regardless of tier, to do the same.

§ 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 an interpretation. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

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§ 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 such 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, based on its interpretation, either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial interpretation approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial interpretation shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager 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 subject to the parties' agreed upon dispute resolution process.

§ 15.2.6 Notwithstanding anything herein to the contrary, claims of the Owner shall be governed in accordance with the statute of limitations periods under Michigan Law.

(Paragraph deleted)

§ 15.2.7 In the event of a Claim against the Contractor, the Owner, Architect or initial Decision Maker 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.

(Paragraphs deleted)

Additions and Deletions Report for AIA® Document A232™ – 2009

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§ 1.1.1 The Contract Documents. The Contract Documents ~~are enumerated in~~ consist of the Agreement between the Owner and Contractor (hereinafter the Agreement), ~~and consist of the Agreement, Conditions of the Contract~~ (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, ~~the portions of the Project Manual defined as Contract Documents therein, and~~ 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 Notice to Proceed~~ 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 other documents such as bidding requirements~~ (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 requirements).

In the event of any conflict among the Contract Documents, the Contract Documents shall be construed according to the following priorities:

Highest Priority: Modifications including Changes Orders and Notices to Proceed;

2nd Priority: Owner/Contractor Agreement;

3rd Priority: Addenda, later date to take precedence;

4th Priority: The Contract Documents (other than those mentioned above) that are included in the Project Manual Sections 0 - 2000;

5th Priority: Drawings and Technical Specifications.

In the event of a conflict among the General Conditions and Supplementary Conditions, the Supplementary Conditions shall control.

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§ 1.1.9 Provide. When the word "provide," including derivatives, is used, it shall mean to fabricate properly, complete, 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 or use under the terms of the Specifications.

§ 1.1.10 Addenda. Addenda are written or graphic instruments issued prior to the execution of the Contract that modify or interpret the Bidding Documents, including the Drawings and Specifications, by additions, deletions, clarifications or corrections.

§ 1.1.11 Knowledge. The terms "knowledge," "recognize," and "discover," their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall mean that which the Contractor knows (or should know), recognizes (or should recognize) and discovers (or should discover) in exercising the care, skill, and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor exercising the care, skill and diligence required of the Contractor by the Contract Documents.

§ 1.1.12 Persistently. The phrase "persistently 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 substantial compliance with the requirements of the Contract Documents.

§ 1.1.13 Product(s). The term "Product(s)" as used in the Contract Documents refers to the materials, systems and equipment provided by the Contractor for use in the work of the Project.

§ 1.1.14 Warranty. The terms "Warranty" and "Guarantee" as used in the Contract Documents shall have the same meaning and shall be defined as "a legally enforceable assurance of satisfactory performance of a product or Work."

§ 1.1.15 Singular/Plural. Where materials, systems and equipment items are referred to in the singular, such reference shall not serve to limit the quantity required. The Contractor shall furnish quantities as required by the Contract Documents to complete the Work.

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

§ 1.1.17. Hazardous Material: "Hazardous Material" means asbestos; asbestos containing material; lead (including lead-based paint); PCB; molds; any other chemical, material, or substance subject to regulation as a hazardous material, hazardous substance, toxic substance, or otherwise, under applicable federal, state, or local law; and any other chemical, material, or substance that may have adverse effects on human health or the environment.

§ 1.1.18. Permitted Material The term "Permitted Materials" as used in the Contract Documents shall mean materials that are general supplies and equipment that have a hazardous or potentially hazardous nature and are or will be used for their intended purpose and which do not pose any significant threat of contamination to the Project site or neighboring properties.

§ 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. In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and the 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, either or both in accordance with the Architect's interpretation. The terms and conditions of this Subparagraph 1.2.3, however, shall not relieve the Contractor of any of the obligations set forth in Paragraphs 3.2 and 3.7.

§ 1.2.1.1 On the Drawings, given dimensions shall take precedence over scaled measurements, and large-scale drawings over small-scale drawings.

§ 1.2.1.2 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. No extra charges or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference that may be found shall be submitted to the Construction Manager and Architect for resolution before proceeding with the Work.

§ 1.2.1.3 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure to the Construction Manager for approval by the Architect before making the change.

§ 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. Where responsibility for particular Work is required of the Contractor, the Contractor shall not be released from that responsibility by reason of the location of the specification or drawing information which establishes the responsibility. Thus, the Contractor shall be responsible for all Work required of him, even though that responsibility may be shown only in that portion of the documents typically pertaining to another contractor or trade.

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§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit. Refer to Project Manual Section 00880 – Regulatory Requirements and Section 00890 – Permits, which detail Contractor's obligations in relation to permits. The Contractor shall not be entitled to additional compensation resulting from its failure to confirm the location of the site utilities or existing structures prior to the opening of the Contractor's bid.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. Information will be furnished only to the extent it is readily available to the Owner.

§ 2.2.4 The Upon written request, 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 relevant 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 Owner's Right to Stop the Work/Owner's/Construction Manager's Right to Stop the Work

1 If the Contractor fails to correct Work that which is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly/persistently fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to or Construction Manager, may order the Contractor to

stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner or Construction Manager to stop the Work shall not give rise to a duty on the part of the Owner or Construction Manager 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 entity. This right shall be in addition to and not in limitation of the Owner's or Construction Manager's rights under any provision of the Contract Documents.

§ 2.4 Owner's Right to Carry Out the Work/Owner's/Construction Manager'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 a ~~ten-day period~~ seventy-two (72) hour period (or such lesser period as determined by Owner or Construction Manager in its discretion when grounds exist to complete the neglected or defaulted Work in a shorter time period) after receipt of written notice from the Owner or Construction Manager to commence and continue correction of such default or neglect with diligence and promptness, the Owner ~~may, or Construction Manager may correct such deficiencies, without prejudice to other remedies the Owner may have, correct such deficiencies, or Construction Manager may have, and without affecting any rights of the Construction Manager or Owner as obligee under the performance and payment bonds issued for this Contract.~~ In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor 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 and expenses made necessary by such default, neglect or failure. ~~Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect, after consultation with the Construction Manager. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner through the Construction Manager. In the event the Owner/Construction Manager directs another entity to perform Work pursuant to this Section that otherwise is the obligation of the Contractor, including correction of safety violations, either at the Contractor's request or as a result of the Contractor's failure to perform such Work, that other entity shall charge the Contractor all costs for labor, material and equipment plus that other entity's administrative, profit and overhead costs. The Contractor shall pay that other entity within ten (10) days of the date of invoice. If not paid within ten (10) days, the Contractor authorizes the Owner to withhold that amount from the Contractor and to pay the same to that other entity from the next payment due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.~~

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§ 3.1.5 These General Conditions refer to the relationship between the Owner and Contractor. As to the contract between the Contractor and its Subcontractors, the General Conditions shall be read as the Contractor having the position of the Owner and the Subcontractors having the position of the Contractor. The Subcontractors are bound to the Contractor just as the Contractor is bound to the Owner. The Subcontractor shall have all the rights, duties and obligations to the Contractor as the Contractor has rights, duties and obligations to the Owner. The Subcontractors shall agree to and accept the same responsibility to the Owner as the Contractor. In the event any failure of a Subcontractor causes any type of injury or loss to the Owner, direct or indirect, the Contractor shall be jointly and severally liable to the Owner for such injury in addition to any responsibility or liability of the Subcontractor.

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

§ 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 2.2.3, 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-Contractor, any member of its organization, or any of its Subcontractors, before proceeding with the Work, 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. Refer to Project Manual Section 01530 – Field Engineering and Layout, which details Contractor's responsibilities for field layout and verification.

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§ 3.2.5 Prior to submitting its bid, the Contractor shall have studied and compared the Contract Documents and shall have reported to the Architect any error, inconsistency or omission in the Contract Documents. It will be presumed that the Contractor's bid and the Contract Sum include the cost of correcting any such error, inconsistency, or omission, which could have been discovered by the exercise of reasonable diligence. Unless the Contractor establishes that such error, inconsistency or omission could not have been discovered by the exercise of reasonable diligence, the Contractor will make such corrections without additional compensation so that the Work is fully functional.

§ 3.2.6 Except as to any reported errors, inconsistencies, or omissions, and to concealed or unknown conditions defined in Subparagraph 4.7.6, by submitting its bid the Contractor represents the following:

§ 3.2.6.1 The Contract Documents are sufficiently complete and detailed for the Contractor to: (1) perform the Work required to produce the results intended by the Contract Documents; and (2) comply with all the requirements of the Contract Documents.

§ 3.2.6.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedures, and techniques necessary to perform the Work, use of materials, selection of equipment, and requirements of product manufacturers are consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to the Work; and (3) requirements of any warranties applicable to the Work.

§ 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, unless the Contract Documents give other specific instruction concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, and shall be fully and 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 written notice to the Owner, the Construction Manager, and the Architect and shall not proceed with that portion of the Work without further written instructions from the Architect, through the Construction Manager. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner required means, methods, techniques, sequences or procedures. The Contractor shall ensure that Suppliers, Subcontractors, and their agents and employees, perform their Work in accordance with the Contract Documents and that all products are ordered and delivered in strict accordance with the Contract Documents and that all products are ordered and delivered in strict accordance with the Schedule. The Contractor shall coordinate its Work with that of all persons or entities on the Project site. The Contractor shall be responsible for the space requirements, locations, and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations, and routing cannot be made as indicated, the Contractor shall meet with all others involved, before installation, to plan the most effective and efficient method of overall installation. A general example is equipment above corridor ceilings where ductwork, piping, conduit, lights, etc. will be installed. A thorough coordinated plan shall be used to install the equipment, to furnish proper clearances, radii of turns, locations, pipe slopes, supporting appurtenances, and access where required. Refer to Project Manual Section 001530 – Field Engineering and Layout.

§ 3.3.2 The Contractor shall be responsible to the Construction Manager and the Owner for acts and omissions of the Contractor's employees, Subcontractors, Suppliers and their agents and employees, and any entity or other persons performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors at any

tier, directly or indirectly, under a contract with the Contractor. The Contractor shall coordinate the Work of its Subcontractors engaged in construction at the Project. Whenever interference might occur, before any Work is done at the places in question, Contractor shall consult with others and shall come to agreement with them as to the exact location and level of piping, conduits, ducts and/or other Work which might cause interference. Refer to Project Manual Section 001530 – Field Engineering and Layout.

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§ 3.3.4 The Contractor shall be responsible for its own, its employees' and its Subcontractors' and Suppliers' workmanship and quality of materials and every part thereof or in connection therewith against risk of any and every kind (except those covered by a Builder's Risk Policy applicable to the Project) until the final acceptance of the Work by Owner.

§ 3.3.5 Within fifteen (15) days of award of Contract, each awarded Contractor shall assemble all necessary information and data concerning its supervision and construction procedures, as identified in Project Manual Section 00200 – Instructions to Bidders. Contractor shall submit updated information from the post-bid meetings as well as the following:

§ 3.3.5.1 A schedule of values in the format and detail as the Construction Manager may require.

§ 3.3.5.2 Contractor's Project Safety Program.

§ 3.3.5.3 A complete list of all items, products and layouts for which shop drawings, brochures or samples are required; a list of each Subcontractor or Supplier; the date of planned submission and time period for fabrication and delivery to the jobsite after approval of the submission. The foregoing items will be provided on forms furnished by the Construction Manager. The Contractor shall thoroughly review the Project Manual and adhere to any additional instructions with regard to Submittals.

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§ 3.4.4 The Contractor shall only employ labor on the Project or in connection with the Work capable of working harmoniously with all trades, crafts and any other contractors and individuals associated with the Project. The Contractor shall also minimize the likelihood of any strike, work stoppage or other labor disturbance.

§ 3.4.5 If any person employed by or under the Contractor is found in the judgment of the Construction Manager or Owner to be incompetent, disorderly, unfaithful, disobedient so far as to endanger proper fulfillment of the Contract or otherwise objectionable, such person shall, if directed by the Construction Manager, be discharged immediately and not employed again on any part of the Work without any liability to Owner or Construction Manager for such discharge.

§ 3.4.6 The Contractor agrees that neither it nor its Subcontractors will discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to hire, tenure, conditions or privilege of employment, or any matter directly or indirectly related to employment, because of race, age, sex, color, religion, national origin, ancestry or physical disability. Breach of this covenant may be regarded as a material breach of this Contract.

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 with 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. 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.

§ 3.5.1 In addition to any other warranties, guarantees or obligations set forth in the Contract Documents or applicable as a matter of law and not in limitation of the terms of the Contract Documents, the Contractor warrants and guarantees that:

- .1 The Owner will have good title to the Work, and all materials and equipment incorporated into the Work unless otherwise expressly provided in the Contract Documents, will be new;
- .2 The Work and all materials and equipment incorporated into the Work will be free from all defects, including any defects in workmanship or materials;
- .3 The Work and all equipment incorporated into the Work will be fit for the purpose for which they are intended;
- .4 The Work and all materials and equipment incorporated into the Work will be merchantable; and
- .5 The Work and all materials and equipment incorporated into the Work will conform in all respects to the Contract Documents.

Upon notice of the breach of any of the foregoing warranties or guarantees or any other warranties of guarantees under the Contract Documents, the Contractor, in addition to any other requirements in the Contract Documents, will commence to correct such breach within seventy-two (72) hours after written notice thereof and thereafter will correct such breach to the satisfaction of the Owner; provided that if such notice is given after final payment hereunder, such seventy-two (72) hour period shall be extended to seven (7) days. The foregoing warranties and obligations of the Contractor shall survive the final payment and/or termination of the Contract. This warranty is not limited by the provisions of Paragraph 12.2 or any other provision of the Contract Document.

§ 3.5.2 ALL WRITTEN WARRANTIES REQUIRED BY THE CONTRACT DOCUMENTS SHALL INCLUDE LABOR AND MATERIALS AND SHALL BE SIGNED BY THE MANUFACTURER OR SUBCONTRACTOR RESPECTIVELY, AND COUNTERSIGNED BY THE CONTRACTOR. ALL WARRANTIES SHALL BE ADDRESSED TO THE OWNER AND DELIVERED TO THE ARCHITECT THROUGH THE CONSTRUCTION MANAGER UPON COMPLETION OF THE PROJECT AND BEFORE OR WITH THE SUBMISSION OF REQUEST FOR FINAL PAYMENT.

§ 3.5.3 The Contractor agrees to assign to the Owner at the time of final completion of the Work any and all manufacturer's warranties relating to materials and labor used in the Work and further agrees to perform the Work in such a manner so as to preserve any and all such manufacturer's warranties.

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. The Contractor shall pay all state and federal taxes levied on its business, income or property and shall make all contributions for social security and other wage or payroll taxes. The Contractor shall be solely responsible for such payments and shall indemnify the Owner and Construction Manager and hold them harmless from same.

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§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the 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 that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. Refer to Project Manual Section 00880 – Regulatory Requirements and Project Manual Section 00890 – Permits for a description of Contractor's obligations in relation to Permits.

§ 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 laws, ordinances, rules and regulations and lawful orders, and all other requirements of public authorities bearing on performance of the Work. The Contractor shall procure and obtain all bonds required of the Owner or the Contractor by the municipality in which the Project is located or by any other public or private body with jurisdiction over the Project. In connection with such bonds, the Contractor shall prepare all applications, supply all necessary backup material, and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay all charges for all

approvals for street closing, parking meter removal and other similar matters as may be necessary or appropriate from time to time 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 Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor in writing, stating the reasons. ~~If the Owner or Contractor disputes the Architect's determination or recommendation, either party may the Contractor shall proceed as provided in Article 15. The Contractor shall be alert to any indication or evidence of existing underground or concealed utilities or structures not shown on the Contract Documents and shall immediately notify the Owner of discovery of such evidence. If the Contractor encounters such utilities or structures, it shall cease operations immediately to minimize damage and shall notify the Owner and Architect. The Contractor shall bear the cost of damage resulting from its failure to exercise reasonable care in its construction activity or from continuing operations without notifying the Owner. No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's prior inspections, tests, reviews, and preconstruction services for the Project, or inspections, tests, reviews, and preconstruction services that the Contractor had the opportunity to make or should have performed in connection with the Project in the exercise of the care and skill required of the Contractor by the Contract Documents.~~

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- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. ~~The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.~~

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§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and Architect through the Construction Manager, the name and qualifications of a proposed superintendent. The Construction Manager may reply within 14 days a reasonable amount of time to the Contractor in writing stating (1) whether the Owner, the Construction Manager, or the Architect has reasonable objection to the proposed superintendent or (2) that any of them require additional time to review. ~~Failure of the Construction Manager to reply within the 14 day period shall constitute notice of no reasonable objection.~~

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the ~~Owner's consent, which shall not unreasonably be withheld or delayed.~~ Owner's/Construction Manager's consent, except with another superintendent who is satisfactory to the Owner/Construction Manager. The Contractor shall maintain order and discipline among all workers involved in the Project at all times. The superintendent shall be present at the Project site at all times when Work is performed by the Contractor or its Subcontractors.

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§ 3.10.1 The Contractor, promptly, and within the time set forth in Project Manual Section 00230 – Schedule and Phasing, after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and the Construction Manager's approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project schedule to the extent required by the Contract Documents, schedule, and within the time set forth in Project Manual Section 00230 – Schedule and Phasing, and shall provide for expeditious and practicable execution of the Work. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Multiple Prime Contractors or the construction or operations of the Owner's own forces. Refer to Project Manual Section 00230 – Schedule and Phasing.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter update it as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals. Refer to Project Manual 01330 – Submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager and Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule. Refer to Project Manual Section 00230 – Schedule and Phasing.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager and Architect and incorporated into the approved Project schedule. In the event the Construction Manager or Owner determines that the performance of the Work, as of a Milestone Date, has not progressed or reached 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) supplying additional manpower, equipment and facilities; and (3) other similar measures (referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Construction Manager or Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the schedule. Failure to order Extraordinary Measures shall not excuse late completion.

§ 3.10.4.1 The Contractor shall not be entitled to an adjustment in the Contract Sum in connection with Extraordinary Measures required by the Construction Manager or Owner under or pursuant to this Subparagraph 3.10.4.

§ 3.10.4.2 The Construction Manager or Owner may exercise the rights furnished the Owner under or pursuant to this Subparagraph 3.10.5 as frequently as the Construction Manager or Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

§ 3.10.5 The Construction Manager or Owner shall have the right to direct a postponement or rescheduling of any date or time for the performance of any part of the Work that may interfere with the operations of other contractors or of the Owner's premises or any of the Owner's tenants or invitees. The Contractor shall, upon the Construction Manager's or Owner's request, schedule any portion of the Work affecting other contractors or other operation of the premises during hours when the premises are not in operation. Any postponement, rescheduling, or performance of the Work under this Subparagraph 3.10.6 may be grounds for an extension of the Contract Time, if permitted under Paragraph 8.3, and an equitable adjustment in the Contract Sum if (1) the performance of the Work was properly scheduled by the Contractor in compliance with the requirements of the Contract Documents, and (2) such rescheduling or postponement is required for the convenience of the Owner.

§ 3.10.6 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager and Architect and incorporated into the approved Project schedule.

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The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These documents shall be available to the Architect and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed. The Contractor shall advise the Construction Manager on a current basis of all changes in the Work made during construction. Refer to Project Manual Section 01320 – Communications, Section 01700 – Contract Close Out, and Section 01720 – Project Record Documents.

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§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work. The Contractor shall review the manufacturer's instructions, and where conflict occurs between the Drawings or Specifications and the manufacturer's instructions, the Contractor shall request clarification from the Architect prior to commencing the Work.

...

§ 3.12.5 Within seven (7) days after award of Contract, the Contractor shall submit to Construction Manager a submittal register as set forth in Project Manual, Section 01330 – Submittals. The Contractor shall review for compliance with the Contract Documents, approve and submit to the Construction Manager Shop Drawings, Product Data, Samples, and in a manner calculated to cause no delay in Contractor's Work or the Work of Owner or other contractors, Shop Drawings, Product Data, Samples, brochures and similar submittals required by the Contract Documents in accordance with the Project submittal schedule approved by the Construction Manager and Architect, or in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Multiple Prime Contractors or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Multiple Prime Contractors.

...

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Construction Manager's or Architect's review or approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Construction Manager's or Architect's review or approval thereof.

...

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a

properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents. Refer to Project Manual Section 01330 – Submittals and Architect's technical specifications for specific instructions regarding Contractor's submittal requirements.

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§ 3.13.3 Only materials and equipment that are to be used directly in the Work shall be brought and stored on the Project Site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project Site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage and all other adversity is solely the Contractor's responsibility.

§ 3.13.4 The Contractor and any entity the Contractor is responsible for shall not erect any sign on the Project site without the Owner's prior written consent, which may be withheld in the Owner's sole discretion.

§ 3.13.5 The Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials, and equipment. Without limitation of any other provision of the Contract Documents, the Contractor shall minimize any interference with the occupancy or beneficial use of any areas in buildings adjacent to the site of the Work or the premises in the event of partial occupancy, as more specifically described in Paragraph 9.9.

§ 3.13.6 The Contractor shall not permit any workers to use any existing facilities at the Project site, including without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site, as amended from time to time. The Contractor shall immediately notify the Construction Manager and Owner in writing if during the performance of the Work the Contractor finds compliance with any portion of such rules and regulations to be impracticable. The Contractor's notice shall set forth the specific issues with such compliance and suggest alternatives under which the same results intended by the rules and regulations may be achieved. The Owner may in such a circumstance, in the Owner's sole discretion, adopt such suggestions, develop new alternatives, or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project site. Refer to Project Manual Section 01140 – Use of Premises, for a complete description of Contractor's obligations regarding use of the site.

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§ 3.14.3 See Project Manual Section 01540 as well as technical specifications for further requirements.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor. Refer to Project Manual Section 01550 – Cleaning Up and Final Cleaning.

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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 indemnify, defend and hold harmless the Owner, Construction Manager and Architect ~~harmless from loss on account thereof, from any and all cost, damage and loss on account thereof,~~ including but not limited to actual attorney's fees, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner, Architect, or Construction Manager. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect through the Construction Manager. The review by the Owner, Construction Manager or Architect of any method of construction, invention, appliance, process, article, device or materials of any kind shall be for its adequacy in the Work and shall not be an approval for the use thereof by the Contractor in violation of any patent or other rights of any third person.

...

§ 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, damages, losses and expenses, including but not limited to attorneys' fees,~~ arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18. Architect and Construction Manager, and their respective agents, representatives, employees, officers, directors, affiliates, and successors (collectively, "Indemnitees") from and against any and all claims, demands, liabilities, causes of action, costs and expenses, or other dispute resolution expenses, including attorney fees and litigation expenses (collectively "Indemnification Claims"), involving:

- (a) Personal injury or death of any person;
- (b) Property damage (including loss of use);
- (c) The breach of any provision in the Owner – Contractor Agreement or Contract;
- (d) Money or other claims by subcontractors, suppliers, their employees or any entity involved in the Work at any tier;
- (e) Any contractual duty of an Indemnitee to indemnify another person; or
- (f) The enforcement by an Indemnitee of its rights under this provision;

but only if such Indemnification Claims arise from or related directly or indirectly to the Work under the Contract by, or the acts of omissions of: (i) the Contractor; (ii) its Subcontractors, Vendors or Suppliers at any tier, or (iii) any persons for whom any of them are responsible, including their employees, agents, officers or representatives. In any event, the obligations contained in Subparagraph 3.18.1 shall not apply to an Indemnification Claim resulting from the sole negligence of an Indemnitee.

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§ 3.18.3 In the event that any claim is made or asserted, or lawsuit filed for damages or injury arising out of or resulting from the performance of the Work, whether or not the Owner, Architect or Construction Manager is named as a party, the Contractor shall immediately advise the Owner, Architect and Construction Manager, in writing, of such claim or lawsuit, and shall provide a full and complete copy of any documents or pleadings relating thereto, as well as a full and accurate report of the facts involved.

§ 3.18.4 An Indemnitee, at its option, may select counsel to defend any claim, cause of action or lawsuit brought against it without impairing any obligation of Contractor to provide indemnification.

...

§ 4.1.2 The Owner shall retain a construction manager lawfully licensed to practice construction management or an entity 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-Contract~~ and is referred to throughout the Contract Documents as if singular in number. All instructions to the Contractor shall be forwarded through the Construction Manager.

§ 4.1.2.1 The Construction Manager shall act as the Owner's agent for purposes of administering and enforcing the Contract.

...

§ 4.1.4 If the employment of the Construction Manager or Architect is terminated, the Owner shall employ a successor construction manager or ~~architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively architect.~~

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§ 4.2.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site ~~whenever the Work is being performed, site.~~ The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner reasonably informed of the progress of the Work, and will report to the Owner and Architect (1) known deviations from the Contract Documents and the most recent Project schedule, and (2) defects and deficiencies observed in the Work.

...

§ 4.2.5 ~~The Construction Manager, except to the extent required by Section 4.2.4, Manager and Architect will not have control over, or charge of, 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, except as provided in Section 3.3.1, 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. The Architect, the Owner and the Construction Manager shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so that the Owner, Architect and the Construction Manager may perform their functions under the Contract Documents.~~

...

§ 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. The Construction Manager shall determine in general whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of known defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, upon written authorization of the Owner, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 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, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 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 Multiple Prime Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from Contractor and other Multiple Prime Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval, them for conformance with the submittal requirements of Contract Documents. 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.

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§ 4.2.11 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, 3.12 or any other obligations set forth in the Contract.~~ The Construction Manager and Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Construction Manager and Architect, precautions, 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.

§ 4.2.12 The Construction Manager will prepare Change Orders and ~~Construction Change Directives~~ Notices to Proceed.

§ 4.2.13 The Construction Manager and the Architect will take appropriate action on Change Orders or ~~Construction Change Directives~~ Notices to Proceed 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.

§ 4.2.17 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.

§ 4.2.18 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,~~ interpretations, 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.

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

§ 4.2.20 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.~~ Architect. The Architect will review and respond in writing to 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.

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§ 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 Multiple Prime Contractors or subcontractors of other Multiple Prime Contractors. The term "Subcontractor" shall also include material and equipment suppliers, which may also be called "Supplier". Each and every Subcontractor shall be understood to have named the Owner and Construction Manager as a third party beneficiary to its subcontract with Contractor and the Owner and Construction Manager shall enjoy all third party beneficiary rights permitted by law.

...

§ 5.2.1 ~~Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Construction Manager for review by the Owner, Construction Manager and Architect the names of persons or entities. Within seven (7) days after award of the Contract, the Contractor shall submit in writing to the Construction Manager, for review by the Owner, Architect and Construction Manager, (1) the name, trade and subcontract amount for each Subcontractor and (2) the names of all persons or entities proposed as manufacturers of the products identified in the Specifications (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Construction Manager may reply within 14 days and, where applicable, the name of the installing Subcontractor. The Construction Manager will promptly reply to the Contractor in writing stating (1) whether or not the Owner, the Construction Manager or the Architect, after due investigation, has reasonable objection to any such proposed person or entity or, (2) that the Construction Manager, Architect or Owner requires additional time for review. Failure of the Construction Manager, Owner, or Architect to reply within the 14-day period shall constitute notice of no reasonable objection entity.~~

...

§ 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. The Contract Sum shall be amended by either of the following at the Owner's sole discretion: (1) the difference between the subcontract amount proposed by the person or entity recommended by the Contractor and the subcontract amount proposed by the person or entity accepted or designated by the Owner and the Construction Manager; or (2) the amount by which the subcontract amount proposed by the person or entity accepted or designated by the Owner and Construction Manager exceeds the amount set forth in the Schedule of Values that is applicable to the Work covered by such subcontract. 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 previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution. The Contractor shall notify the Owner, the Architect and the Construction Manager of any proposed Subcontractor substitution a minimum of 10 (ten) days prior to such proposed change.

...

~~By appropriate agreement, written where legally required for validity, 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, and to assume toward the Contractor all the obligations and responsibilities, including responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has~~

against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement 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.

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§ 5.4.2 Upon such assignment, if the Work If the Work in connection with a subcontract has been suspended for more than ~~30 days~~, thirty (30) days after termination of the Contract by the Owner pursuant to Paragraph 14.2 or Paragraph 14.4 and the Owner accepts assignment of such subcontract, the Subcontractor's compensation shall be equitably adjusted for ~~increases in cost resulting from the suspension~~, any increase in direct documented costs necessarily incurred by such subcontractor as a result of the suspension. In no event will such an adjustment include any consequential damages or indirect costs such as extended home office overhead or lost profit.

§ 5.4.3 Upon such 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.~~

§ 5.5 Contractor and Subcontractors' Warranty Acknowledgement. The Contractor shall execute and deliver to the Owner, and shall cause anyone giving warranties that is contractually bound to the Contractor to execute and deliver to the Owner, the following Warranty Acknowledgement before a Certificate of Final Completion is issued:

Warranty Acknowledgement

(Name of Subcontractor) ("Subcontractor") warrants that all of its Work complies with requirements of the Contract Documents. If, within the time period Contractor is responsible for warranties under the Contract Documents, any of Subcontractor's Work is found to be not in accordance with the requirements of the Contract Documents, Subcontractor shall correct the Work and its sole expense promptly after receipt of written notice from the Owner.

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, which may include persons or entities under separate contracts not administered by the Construction Manager, and Manager. The Owner further reserves the right to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15 elsewhere in the Contract Documents and any time extension or adjustment in Contract Sum will be governed by the applicable provisions of the Contract. The Contractor shall be responsible for coordination the Work with the work of the other Contractors, including the Owner's own forces or separate contractors, so as to complete the Work in accordance with the Project time schedule.

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§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11 and 12.12, as amended.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a separate contractor or to other Multiple Prime Contractors because of the Contractor's delays, improperly timed

activities or defective construction. ~~The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces or other Multiple Prime Contractors.~~

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor ~~wrongfully~~ causes to completed or partially completed construction or to property of the Owner, Construction Manager, separate contractors, or other Multiple Prime Contractors as provided in Section 10.2.5. Should a claim be made that the Contractor wrongfully delayed or caused damage to the Work or property of another contractor, the Contractor shall promptly settle the dispute with such other contractor. If a separate contractor sues the Construction Manager or Owner on account of any delay or damage alleged to have been caused by the Contractor, the Construction Manager will notify the Contractor who shall defend such proceedings at the Contractor's sole expense. If any judgment or award against the Construction Manager or Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Construction Manager or Owner for all costs, including attorney's fees and court costs which either may have incurred.

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

...
If a dispute arises among the Contractor, other ~~Multiple Prime Contractors~~ and the Construction Manager and/or 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, with notice to the Architect, will allocate the cost among those responsible~~ rubbish as described in Section 3.15, the Owner or Construction Manager may clean up and allocate the cost among those responsible as the Construction Manager, in consultation with the Architect, determines to be just. The Owner's right to clean up shall in no event be deemed a duty, and should the Owner choose not to pursue this remedy, the Contractor necessitating such action shall remain fully responsible for the same. Refer to Project Manual Section 01550 – Clean Up and Final Cleaning.

...
§ 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~~ Notice to Proceed, written contract amendment, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Refer to Project Manual Section 01250 – Changes in the Work.

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

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, ~~Construction Change Directive~~ Notice to Proceed or order for a minor change in the Work. Except as permitted in paragraph 7.3, an increase 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 any alteration or addition to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any claim for an increase in any amounts due under the Contract Documents or for a change in any time period provided for in the Contract Documents.

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

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 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. Any impact such change may have on the unchanged Work, including but not limited to claims for acceleration, stacking, inefficiency, ripple effect, disruption, compression, interference, delay and cumulative impact, and any and all adjustments to the Contract Sum and the Schedule. In the event a Change Order increases the Contract Sum, the Contractor shall include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents.

§ 7.3 Construction Change Directive-Notice To Proceed

§ 7.3.1 A Construction Change Directive-Notice to Proceed 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-Notice to Proceed, 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-Notice to Proceed shall be used in the absence of total agreement on the terms of a Change Order.

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

...

.4 As provided in Section 7.3.7.

However, the contract time shall be adjusted only if the Contractor demonstrates to the Owner and Construction Manager that the changes in the Work required by the Notice to Proceed adversely affect the critical path of the Work.

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

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

§ 7.3.6 A Construction Change Directive-Notice to Proceed 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.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the method and 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. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1—Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance;

- ~~2~~ Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- ~~3~~ Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- ~~4~~ Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- ~~5~~ Additional costs of supervision and field office personnel directly attributable to the change.

~~§ 7.3.8 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.~~

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§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. All Work shall be completed in sufficient time to allow for clean-up and preparation for Owner move-in prior to the date of Substantial Completion of the Work.

§ 8.2.4 Without altering the applicability and obligations of Section 8.2.3, the Contractor shall prosecute the Work undertaken in a prompt and diligent manner wherever such Work, or any part of it, becomes available, or at such other times as the Owner and/or Construction Manager may direct so as to promote the general progress of the entire construction. The Contractor shall not, by delay or otherwise, interfere with or hinder the Work of any other contractor, the Owner, Construction Manager or the Architect. Any supplies, materials, tools and/or equipment that are to be furnished by the Contractor hereunder shall be furnished in sufficient time to enable the Contractor to perform and complete its Work within the time or times provided for herein. If the Contractor, through its negligence or failure, including the negligence or failure of its Subcontractors or suppliers, thus to furnish the necessary labor and/or supplies, materials, tools and/or equipment to meet construction needs in accordance with the established Schedule, then it shall increase its forces or work such overtime as may be required, at its own expense, to bring its part of the Work up to the proper schedule. In the event the Contractor fails to take such action necessary to bring its part of the Work up to schedule within twenty-four hours of receiving notice from the Owner or Construction Manager, then the Owner, at its sole option, may supplement the Contractor's forces, materials and/or equipment or remove the Contractor from the Project, and the Owner may complete part or all of the remainder of the Contractor's Work, either utilizing in the Owner's sole discretion its own forces, new contractors chosen by the Owner or any Subcontractor or supplier of the Contractor, which may include fixed price supplemental work time and materials supplemental work, or any combination thereof, which in Owner's sole discretion will most quickly and completely cure the failure of the Contractor. The Contractor shall be responsible for any and all costs of performing or completing the Work that are incurred by the Owner or any Contractor, Subcontractor, Supplier, or other entity on the Owner's behalf. The Contractor shall pay the Owner for such costs within ten (10) days of the date of demand. If not paid within ten (10) days, the amount will be withheld from the Contractor and paid to the Owner from the next payment due the Contractor under the Contract. Exercise of such rights shall in no way limit or jeopardize the Owner's right to any other remedy, including but not limited to, a claim against the Performance

Bond of the Contractor.

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§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner, Owner's own forces, Construction Manager, Architect, any of the other Multiple Prime Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, adverse weather conditions not reasonably anticipated, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes that the Architect, based on the recommendation of the Construction Manager, litigation, or by other causes which the Construction Manager determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract Time and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay is not caused, or could not have been anticipated or prevented by the Contractor, could not be limited or avoided by the Contractor's timely notice to the Owner of the delay, and is of a duration not less than one (1) day.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15. Any claim for extension of time shall be made in writing to the Construction Manager in the manner and time specified by Paragraph 4.7; otherwise it shall be waived. In the case of a continuing delay only one claim is necessary. The Contractor shall provide a written estimate of the probable effect of such delay on the progress of the Work.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents. Notwithstanding anything to the contrary in the Contract Documents, an extension in the Contract Time, to the extent permitted under Subparagraph 8.3.1, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work; (2) hindrance or obstruction in the performance of the Work; (3) loss of productivity or acceleration; or (4) other similar claims (collectively referred to in this Subparagraph 8.3.3 as "Delays") whether or not such Delays are foreseeable, unless a Delay is caused by the Owner's active interference with the Contractor's performance of the Work, and only to the extent such acts continue after the Contractor furnishes the Owner with notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any Delay, including without limitation, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the Work.

Where the Contract is based on a Stipulated Sum or Guaranteed Maximum Price, the Contractor shall submit to the Construction Manager, before the first Application for Payment, within seven (7) days after award of contract, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. In the event there is one Contractor, the Construction Manager shall forward to the Architect the Contractor's schedule of values. If there are Multiple Prime Contractors responsible for performing different portions of the Project, the Construction Manager shall forward the Multiple Prime Contractors' schedules of values only if requested by the Architect.

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner, Construction Manager or

Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents. See Project Manual Section 01290 – Payment Procedures for Contractor's obligations in relation to Applications for Payment.

§ 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 Construction Change Directives, Notice to Proceed, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

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§ 9.3.1.3 The Contractor shall provide supporting data substantiating the Contractor's right to payment as the Owner, Architect and Construction Manager may require.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall Payment will not be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site or equipment stored on or off site unless the requirements set forth in Project Manual Section 01290 regarding materials stored off site are met to the satisfaction of Construction Manager and Owner.

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

§ 9.3.3.1 The Contractor further expressly undertakes to defend, indemnify and hold harmless the Indemnitees, at the Contractor's sole expense, against any actions, lawsuits, or proceedings brought against the Indemnitees as a result of Liens filed against the Work, the site of the Work, the Project site and any improvements on it, payments due the Contractor, or any portion of the property of any of the Indemnitees. The Contractor agrees to defend, indemnify and hold the Indemnitees harmless from and against any such Liens and agrees to pay any judgment resulting from any such actions, lawsuits, or proceedings.

§ 9.3.3.2 The Owner shall release any payments withheld due to a Lien if the Contractor obtains security acceptable to the Owner or a lien bond that is (1) issued by a surety acceptable to the Owner that is licensed and admitted in the state; (2) in form and substance satisfactory to the Owner; and (3) in an amount not less than One Hundred Fifty Percent (150%) of such Lien. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under this Paragraph 9.3, including, without limitation, the duty to defend and indemnify the Indemnitees. The cost of any premiums incurred in connection with such bonds and security shall be the Contractor's responsibility and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.3.3 Notwithstanding the foregoing, the Owner reserves the right to settle any disputed Lien by making payment to the lien claimant or by such other means as the Owner, in the Owner's sole discretion, determines is the most economical or advantageous method of settling the dispute. The Contractor shall promptly reimburse Owner, upon demand, for any payments so made.

§ 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 issue to the Owner a Certificate for Payment. The

Architect will, after the receipt of the Project Application for Payment with the recommendations of the Construction Manager, review the Project Application for Payment and will either issue a Project Certificate for Payment to the Owner with a copy to the Construction Manager, Manager for such amount amounts as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification reasons for withholding a Certificate as provided in Subparagraph 9.5.1. Such notifications will be forwarded to the Contractor by the Construction Manager.

§ 9.4.2 Where there are Multiple Prime Contractors performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives the Multiple Prime Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Multiple Prime Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Multiple Prime Contractors' application with information from similar applications for progress payments from other Multiple Prime Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Multiple Prime Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect. The issuance of a separate Certificate for Payment or a Project Certificate for Payment will constitute representations made separately by the Construction Manager and Architect to the Owner, based on their individual observations at the site and the data comprising the Application for Payment submitted by the Contractor, that the Work has progressed to the point indicated and that, to the best of the Construction Manager's and Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Construction Manager or Architect. The issuance of a separate Certificate for Payment or a Project Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a separate Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and 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.

§ 9.4.3 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.4 The Construction Manager's certification of an Application for Payment or, in the case of Multiple Prime Contractors, a Project Application and Certificate for Payment shall be based upon the Construction Manager's evaluation of the Work and the information provided as part of the Application for Payment. The Construction Manager's certification 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 and the quality of the Work is in accordance with the Contract Documents. The certification will also constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

§ 9.4.5 The Architect's issuance of a Certificate for Payment or in the case of Multiple Prime Contractors, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and information provided as part of 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, that the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified.

~~§ 9.4.6 The representations made pursuant to Sections 9.4.4 and 9.4.5 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.~~

~~§ 9.4.7 The issuance of a separate Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.~~

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.4 and 9.4.5 9.4.2 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.3-9.4.1. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate 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 Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

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.5 damage to the ~~Owner~~ Owner, Construction Manager or a separate contractor;

...

.7 repeated failure to carry out the Work in accordance with the Contract Documents;
.8 or any other default or breach under the Contract Documents.

...

§ 9.5.4 Should the Subcontractor be in debt to the Owner for any reason, whether in connection with this Contract or a separate contract on this, or another Project, then Owner shall have the right to apply funds from this Contract against the debt owed.

§ 9.5.5 If the Contractor disputes any determination by the Owner, Architect, or Construction Manager with regard to any Certificate for Payment, the Contractor shall nevertheless continue to expeditiously perform the Work and such dispute shall provide no basis for any manner of suspension of the Contractor's performance of the Work.

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect. The Owner shall either forward payments for the preceding month's Work to the Contractor directly, or forward payments for the preceding month's Work to the Construction Manager for distribution to Contractors. As agent of the Owner, Construction Manager shall forward payment to Contractor following verification of Owner's disbursement checks.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner or Construction Manager 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.

§ 9.6.3 The Construction Manager will, on request, Manager, on request, and in the Construction Manager's discretion, may 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 Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment 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 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 except as may otherwise be required by law. However, if either Owner, Construction Manager or Architect has cause for concern of whether all payments have been made or will be made as required to subcontractors, laborers or suppliers or creditors of the Subcontractor, Owner, Construction Manager or Architect, in their sole discretion, and without limiting other remedies, after seventy-two (72) hours notice to Contractor, have the right to issue payments either by joint check, payable to both Contractor and the subcontractor, laborer, supplier or creditor, or directly to the subcontractor, laborer, supplier or creditor. Such payments shall be applied against the Contract Sum to the same extent as if the payment were made solely to the Contractor. The Owner's, Construction Manager's or Architect's rights to issue joint checks or direct payments shall in no event create an obligation on the part of the Owner, Construction Manager or Architect to exercise this right on behalf of a subcontractor, laborer, supplier or creditor.

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§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers Suppliers shall be held by the Contractor for those Subcontractors or suppliers 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, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall 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 Subject to applicable law, if a petition in bankruptcy or any other arrangement or proceeding regarding insolvency, assignment for the benefit of creditors, trust, chattel mortgage, or similar state or federal proceeding, whether voluntary or involuntary, shall be filed with respect to the Contractor, the Owner may withhold the final balance, or any other payments, whether or not an application for progress payment has been properly filed, until expiration of the period of any guarantee or warranties required for the contractor, and the Owner may pay out such funds the amount necessary to satisfy any claims or costs that otherwise would have been covered by such guarantee or warranties.

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents. § 9.7.1 If the Construction Manager should fail to issue recommendations within fourteen (14) days of receipt of the Contractor's Application for Payment, or if, through no fault of the Contractor, the Architect does not issue a Project Certificate for Payment within fourteen (14) days after the Architect's receipt of the Project Application for Payment, or if the Owner does not pay the Contractor within fourteen (14) days after the date established in the Contract Documents any amount certified by the Architect or awarded by litigation, then the Contractor may, upon fourteen (14) additional days' written notice to the Owner, the Architect and the Construction Manager, stop Work until payment of the amount owing has been received. The Contract Sum shall be increased by

the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

§ 9.7.2 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner, or issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

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§ 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 through the Construction Manager a comprehensive list of items to be completed or corrected prior to final payment, corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit through the Construction Manager a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. In no case shall the Contractor's final completion of the Work and contract closeout (see Project Manual Section 01700 - Contract Closeout) exceed sixty (60) days from the date of issuance of the Certificate of Substantial Completion. In the event Contractor fails to complete the Work within the sixty (60) day period, the Owner may, in addition to all of its other rights and remedies under the Contract and at law and/or equity, complete the Contractor's Work at the sole expense of Contractor. Owner shall be entitled to deduct from the final payment all costs and expenses incurred in completing the Work, including additional Construction Management and Architecture fees and costs. In the event the costs exceed the amounts being withheld by Owner for final payment, the Contractor or its surety shall make the excess payment within five (5) days of demand by the Owner.

§ 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 requirements of 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, through the Construction Manager, a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

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

list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

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§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, reserves the right to occupy the whole or any portion of the premises at any time prior to completion of the Work provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Project, the Work. It is understood and agreed that the right to use the premises is part of the Contract and the Contractor has taken this possibility into account when preparing its bid, and that the Contractor shall proceed with the Work in such a manner as may be directed and shall cooperate with the Owner to limit interruptions to the Owner's routine operations. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect through the Construction Manager, as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

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§ 9.9.4 Any agreement as to the acceptance of non-conforming Work not complying with the requirements of the Contract Documents, shall be in writing in the form of a Change Order, acceptable to the Owner's authorized representative and signed by all parties.

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager will evaluate the completion of Work of the Contractor and then forward the notice and Application, with the Construction Manager's recommendations, 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 Certificate for Payment or Project Certificate 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 terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. All warranties and guarantees and specified closeout documents required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Construction Manager as part of the final Application for Payment (Refer to Project Manual Section 01700 – Contract Closeout, Section 01720 – Project Record Documents, Section 01730 – Operations and Maintenance Data, Section 01740 – Warranties and Guarantees, and Section 01750 – Systems Demonstration, Training and Start Up). The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees and other specified closeout documentation have been received and accepted by the Owner.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or Construction Manager or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the

insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the ~~Owner~~, Owner or Construction Manager, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the ~~Owner~~, Owner or Construction Manager. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner and Construction Manager to indemnify the Owner and Construction Manager against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner and/or Construction Manager all money that the Owner and/or Construction Manager may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees, (6) an affidavit that states the Work is fully completed and performed in accordance with the Contract Documents and is satisfactory to the Architect and the Owner, (7) in the event of Contractor bankruptcy, at the Owner's option, an order entered by the court having jurisdiction of the Contractor's insolvency proceeding authorizing such payment, (8) a general release executed by the Contractor on a form provided by the Construction Manager.

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- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract ~~Documents~~, Documents;
- .4 Owner's claims arising after payment;
- .5 claims for indemnification; or
- .6 claims about which the Owner has previously given notice to the Contractor.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or ~~material supplier~~ Supplier shall constitute a waiver of all claims by that payee against Owner, Architect, and Construction Manager except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment. If Contractor fails to submit a final Application for Payment or a final conditional waiver within a reasonable time after request by Construction Manager, and in no event later than sixty (60) days after the issuance of the Certificate of Substantial Completion, the Owner and Construction Manager may unilaterally determine the balance due to the Contractor and the Contractor shall be bound by such determination.

The Contractor shall be solely responsible to the Owner and Construction Manager 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 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, Suppliers, agents or employees of the Contractors or Subcontractors, or Subcontractors or Suppliers, or any other persons performing portions of the Work and not directly employed by the Construction Manager.~~ the Work, as these obligations are the sole responsibility of the Contractor. Contractor shall be responsible for payment of all fines levied against Owner, Architect or Construction Manager and all costs (including attorney's fees and litigation/dispute resolution costs) incurred as a result of such fines arising from or relating to conduct of Contractor's Work.

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

- .1 employees on the Work and all employees involved in the Project and all other persons who may be affected thereby;
- .3 other property at the site or adjacent thereto, such as ~~as~~, but not limited to, 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-Owner, Construction Manager,~~ or other Contractors.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, ~~reasonable all necessary or appropriate~~ safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities. 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 damages to such property or improvements shall be promptly repaired by the Contractor. Without limiting the indemnity provisions elsewhere in the Contract Documents, the Contractor shall defend, indemnify and hold harmless the Owner and Construction Manager from and against any and all actions or damages arising out of or 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. Use of explosives is not permitted. When use or storage of hazardous substances or equipment, or unusual construction methods are necessary, Contractor shall give Owner, Construction Manager and Architect reasonable advanced notice. When driving or removing piles, wrecking, performing excavation work or other similar potentially dangerous work, the Contractor shall provide protection and exercise utmost care, under supervision of properly qualified personnel, so as not to endanger life or property. Contractor is fully responsible for any and all damages, claims and for defense of all actions against Owner, Construction Manager and Architect resulting from prosecution of such work in connection with or arising out of the Contract.~~

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

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

§ 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, load or permit any part of the structure or site to be loaded with a weight that will endanger the structural integrity of the structure or site or the safety of workmen or any other persons on or about the Work. When required law or for the safety of the Work, the Contractor shall shore up, brace, underpin, and protect foundations and other portion or existing structures that re in any way affected by the Work. Before commencement of any part of the Work, the Contractor shall serve any and all notices required to be given to adjoining land and/or property owners or other parties.~~

§ 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, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter. When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause.~~

§ 10.3 Hazardous Materials

§ 10.2.9 The Contractor shall promptly report by telephone and in writing to the Owner, Construction Manager and Architect all accidents arising out of or in connection with the Work that cause death, personal injury, or property damage, giving full details and observations of any witnesses. See Project Manual Section 00810 – Safety Program

§ 10.2.10 Injury or Damage to Person or Property

If Contractor suffers injury or damage to person or property because of an act or omission of the Owner, or of others for whose acts the Owner is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the Owner 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. The Contractor's failure to do so shall be an irrevocable waiver of any claim against the Owner arising out of such injury or damage. Injury or damage to persons or property suffered by the Owner because of an act or omission of the Contractor or others for whose acts the Contractor is legally responsible shall be subject to the limitations provisions established by Michigan law. § 10.3

Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. 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. In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB), or any other hazardous material, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner, Construction Manager and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos, polychlorinated biphenyl (PCB) or any other material deemed a Hazardous Material, and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or any other Hazardous Material, or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which litigation has not been demanded, or by litigation under Article 4. The term "rendered harmless" shall be interpreted to mean that levels of asbestos, polychlorinated biphenyls, and other Hazardous Materials are less than any applicable exposure standards set forth in OSHA regulations or other applicable state regulations. In no event, however, shall the Owner, Construction Manager or Architect have any responsibility for any substance or material that is brought to the Project site by the Contractor, any Subcontractor, any Supplier, or any entity for whom any of them is responsible. The Contractor agrees not to use any fill or other materials to be incorporated into the Work that are hazardous, toxic, or made up of any items that are hazardous or toxic. Refer to Project Manual Section 00840 – Hazardous Materials.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to 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 such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resumed upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut down, delay and start up.

§ 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 not 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 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 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 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 indemnify the Contractor for all cost and expense thereby incurred.

§ 10.3.2 The Contractor shall not, nor shall it permit any member of the construction team to bring on, keep, store, use, release or dispose of any hazardous or potentially Hazardous material on, in or about the Project site except Permitted Materials and as required by section 10.3.8., subject to the requirements of §10.3.9.

§ 10.3.3 The Contractor shall cause the presence, use, storage and/or disposal of Permitted Materials by any member of the construction team to be in strict (not substantial) compliance in every respect with all applicable laws and shall promptly notify the Owner if any amount of Permitted Materials or any other Hazardous Materials are released on the Project site at any time in a quantity that would have to be reported or remediated under any applicable laws.

.1 the Contractor shall at its expense, without recovery from the Owner, under the Contract Sum or otherwise, fully and promptly remediate each and every release of Permitted Materials and any other Hazardous Materials in full compliance with all applicable laws, to the most stringent standards available under all applicable laws, and in cooperation with the Owner, except to the extent of contamination (i) that existed before Work began at the Project site and neither the Contractor nor any other member of the construction team has exacerbated such preexisting contamination after recognizing the presence and general location of such contamination, or (ii) was caused directly by the Owner, the Architect, a separate contractor of the Owner who is not a member of the construction team, or any third party. The Contractor shall be responsible if and to the extent, after recognizing the presence and general location of Hazardous Materials that were preexisting at the site, or after it should have recognized such presence and general location, it exacerbates such contamination.

§ 10.3.4 The Contractor shall at its expense, without recovery from the Owner, under the Contract Sum or otherwise, be solely responsible to the Indemnitees for and shall defend, indemnify and hold harmless the Indemnitees and the Project site from and against all claims, damages costs, fines, judgments and liabilities, including attorneys fees and costs, arising out of or in connection with the generation, release, transportation, storage, use, disposal or presence of Permitted Materials or Hazardous Materials at the Project site by or due to any member of the construction team or for any noncompliance with section 10.3 by any member of the construction team. The indemnity in the previous sentence and in section 10.3.4 does not include claims, damages, costs, fines, judgments or liabilities, to the extent they arise from (i) contamination that existed before Work began at the Project site which was not exacerbated by the Contractor or any member of the construction team (after it recognized or should have recognized the presence and general location of such contamination) or (ii) contamination that was caused directly by the Owner, the Architect, a separate contractor of the Owner who is not a member of the construction team, or any third party.

§ 10.3.5 The Contractor's responsibility under the foregoing indemnification shall include any and all governmentally mandated removal and/or clean up of any such Permitted Materials or Hazardous Materials.

§ 10.3.6 If the Contractor shall receive any notice, whether oral or written, of any inquiry, test, investigation, enforcement proceeding, environmental audit or the like by or against the Contractor, any member of the construction team, or the Work with regard to any permitted or Hazardous Materials at or emanating from the Project site, the Contractor shall immediately notify the Owner, Construction Manager and Architect.

§ 10.3.7 If any member of the construction team encounters on the Project site material, which it believes is a Hazardous Material in any form (other than Permitted Materials being used in an appropriate manner or asbestos, asbestos containing materials or polychlorinated biphenyl (PCBs) which have been rendered harmless), the Contractor shall (i) immediately stop Work in the area affected, (ii) report the condition to the Owner, Construction Manager and Architect as expeditiously as possible, and (iii) clear all persons from the area of exposure. The Work in the affected area shall not be resumed until the Hazardous Material has been removed or rendered harmless as evidenced by written agreement of the Owner and the Contractor. The term 'rendered harmless' shall be interpreted to mean that the levels are less than any applicable exposure standards set forth in OSHA regulations or other applicable state regulations and all applicable laws. In no event, however, shall the Owner have any responsibility for any substance or material that is brought to the Project site by any member of the construction team. Except for the Permitted Materials, no member of the construction team shall use any fill or other materials to be incorporated into the Work, which are Hazardous Materials, toxic or comprised of any items that are Hazardous Materials or toxic.

§ 10.3.8 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Construction Manager, Architect, Contractor, Subcontractors, and agents, officers, directors, affiliates and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney fees and litigation costs, arising out of or resulting from performance of the Work in an area affected by Hazardous Materials (excluding Permitted Materials and other Hazardous Materials brought to the site by the Contractor or persons for whom it is responsible and excluding all claims, damages, losses and expenses, including but not limited to attorney fees and litigation costs, arising out of or resulting from any exacerbation of preexisting contamination after the Contractor recognized or should have recognized the presence or general location of such preexisting contamination), if (i) in fact, the material presents the risk of bodily injury or death 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, but only to the extent that such damage, loss or expense is not due to the negligence of the person seeking indemnity.

§ 10.3.9 The Contractor shall not be required to cause performance without its consent any Work relating to asbestos or PCB or other Hazardous Materials, except as otherwise required under this section 10.3. The Contractor agrees to excavate and stockpile on site soils with levels of contamination such that it can be safely and lawfully handled without special protective equipment if the Owner so requests. In such a circumstance, the Contractor shall comply with all applicable laws, shall be fully responsible for any non-compliance with all applicable laws, and shall indemnify, defend and hold harmless the Owner, Architect and Construction Manager for any and all claims damages, losses and expenses, including but not limited to attorney fees and litigation costs, arising from Contractor's failure to comply with applicable laws.

§ 10.3.10 The Contractor shall take care to minimize the use of any Hazardous Materials to the extent consistent with the orderly conduct of the Work. To the maximum extent practical, the Contractor shall cause Permitted Materials which contain Hazardous Materials (and any explosive materials which are not Hazardous Materials) to be stored off the Project site and off Owner's premises. Except for Permitted Materials, all Hazardous Materials used, stored or generated at the Project site by the construction team shall be used, stored, transported and disposed of in strict (not substantial) conformity with applicable laws, codes, rules, regulations, guidelines and orders of governmental authorities having jurisdiction. The Contractor shall maintain — and provide promptly to Owner upon demand — appropriate and complete documentation evidencing the Contractor's compliance with all such laws, codes, rules, regulations, guidelines and orders.

The Contractor shall not permit inclusion of asbestos, polychlorinated biphenyls or urea formaldehyde in any construction materials. The Contractor shall be responsible for the removal and cleanup of all Hazardous Materials and wastes brought to the Project site or generated at the pProject site by any member of the construction team. The Contractor shall indemnify and defend the Indemnitees against and hold them harmless from all claims, suits, damages, losses, fines, penalties, costs and expenses, including attorneys' fees and litigation expenses, arising from or in connection with or otherwise relating to, the use, generation, storage, release, transporting and disposal of any Hazardous Materials or waste in connection with the Work excluding such items as are Owner's responsibility as set forth in § 10.3.8.

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§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

1. Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
2. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
4. Claims for damages insured by usual personal injury liability coverage;
5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
6. Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
7. Claims for bodily injury or property damage arising out of completed operations; and
8. Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18. Reference Project Manual Section 00500 – Insurance for the insurance provisions applicable to Contractor under this Contract.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Construction Manager, the Construction Manager's consultants, the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

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§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles, unless the loss was caused Contractor or a party for whom the Contractor is responsible, in which case Contractor shall be responsible for the applicable deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit. Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or

otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

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

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

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order. The Owner, Architect and Construction Manager, "Barton Malow Company", shall be named as an additional insured on all property and liability policies. Refer to Project Manual 00500 – Insurance.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise. Before an exposure to loss may occur, the Owner shall file with the Construction Manager a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor. Waivers of Subrogation. Reference Project Manual Section 00500 – Insurance for the insurance provisions applicable to Contractor under this Contract. § 11.3.7 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary, through the Construction Manager, and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees each of the other, and (2) the Construction Manager, Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as the Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, Owner's separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements,

written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner. If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7. The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or distribution of insurance proceeds in accordance with the direction of the arbitrators.

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract. Bonds shall be executed by a responsible surety licensed and admitted in the state where Work is located, listed in the latest version of the Department of the Treasury's Circular 570, "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies," with the bond amount less than or equal to the underwriting limitation; and with an AM Best's rating of no less than A- VII or better. Bonds shall meet all other requirements set forth in Section 0500 - Bonds - of the Project Manual.

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The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 any portion of the Work is determined by the Owner, Construction Manager or Architect, either during performance of the Work or

during any applicable warranty period, to be defective or not in compliance with the requirements therefor, the Construction Manager or Owner shall notify the Contractor in writing that such Work is rejected. Thereupon, the Contractor shall immediately replace and/or correct such Work by making the same comply strictly with all the requirements therefor. The Contractor shall bear all costs of correcting such rejected Work, including work of other Subcontractors and including compensation for the Architect's and Construction Manager's additional services and any delay or related damaged to the Owner made necessary thereby. The Construction Manager shall have the right to charge the Contractor for any compensation payable for the Architect's or Construction Manager's additional services required by the Contractor's rejected Work and deduct the payment from the next payment due the Contractor.

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§ 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 an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner or Construction Manager to do so unless the Owner or Construction Manager 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 2.4. Section 2.4., without affecting the surety(ies) obligations under the Bonds. Refer to the Project Manual Section 01740 - Warranties and Guarantees.

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§ 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.

...

§ 12.2.6 Unless the Owner authorizes otherwise, Substantial Completion shall not commence the correction period for any equipment or systems that:

- .1 Are not fully operational (equipment or systems shall not be considered fully operational if they are intended to provide service to any portion of the building which the Owner has not accepted as substantially complete); or
- .2 Are not accepted by the Owner

§ 12.2.7 The Contractor shall respond immediately to correct Work deficiencies and/or punch list items. Failure to correct Work deficiencies and/or punch list items in a timely fashion shall be a material breach, and the Owner may terminate the Contract. Whether or not the Contract is terminated, if the Contractor fails to make corrections in a timely fashion, such Work may be corrected by the Owner, in its sole discretion, at the Contractor's expense and the Contract Sum may be adjusted by backcharge accordingly. The Contractor shall promptly notify the Construction Manager in writing when Work deficiencies and/or punch list items are completed. If upon review of the Work by the Construction Manager, after such notification by the Contractor, Work deficiencies and/or punch list items shall continue to exist, the Contractor shall reimburse the Owner for any costs incurred by the Owner, plus ten percent (10%) overhead and profit, as well as the Construction Manager's and Architect's fees for reinspections of the 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. Acceptance of nonconforming Work may only occur pursuant to such written Change Order.

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§ 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.~~ The Contractor shall not assign the Contract as a whole or part without written consent of the other. If either party-Owner. If Contractor attempts to make such an assignment without such consent, that party it and its surety(ies) 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.~~ Project. The Contractor shall execute all consents reasonably required to facilitate such assignment.

...

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

§ 13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail or by national overnight courier service providing a tracking system and proof of delivery to the last business address known to the party giving notice. Owner or Construction Manager as Owner's Agent, may, at their option, serve notice on the Contractor by faxing a copy of the notice to the Contractor at its last known facsimile number and subsequently mailing the notice to the Contractor's last known business address.

...

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

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Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located, not bear interest

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The Owner and the Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time 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 the Contractor waive shall commence all claims and causes of action in accordance with Michigan law, regardless of time frames identified in this Agreement. The Contractor shall commence all claims and causes of action not commenced in accordance with this Section 13.7 in accordance with the Contract and in accordance with Michigan law.

§ 13.7.2 Regardless of any provisions to the contrary, the statute of limitations with respect to any defect or nonconforming Work which is not discovered by the Owner shall not commence until the discovery of such defective or nonconforming Work by the Owner.

§ 13.8 Except where otherwise expressly required by the terms of the Contract, exercise by the Owner of any contractual or legal right or remedy without prior notice to or approval by the Contractor's surety shall in no way bar or prohibit the Owner's ability to pursue such rights or remedy. Further, pursuit of such a right or remedy without prior notice to or approval or surety shall in no way compromise, limit or bar any claim by the Owner against a surety bond of the Contractor.

...

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of ~~30~~ 90 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

...

- ~~.3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or~~
- ~~.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1. Documents subject to justifiable withholding of payment as described herein or in the Contract Documents.~~

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§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of ~~60 consecutive days~~ 90 consecutive days or if repeated suspensions, delays, or interruptions by the Owner as described in Paragraph 14.3 constitute in the aggregate the lesser of an amount equal to the Contract time or One Hundred Twenty (120) days in any one (1) year period through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has 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' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

...

- ~~.1 repeatedly~~ refuses or fails to supply enough properly skilled workers or proper materials;
- ~~.3 repeatedly~~ disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- ~~.4 otherwise is guilty of substantial breach of a provision of the Contract Documents;~~
- ~~.5 is petitioned bankrupt, or makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of the Contractor's insolvency;~~
- ~~.6 breaches any warranty made by the Contractor under or pursuant to the Contract Documents;~~
- ~~.7 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's~~

- ability to complete the Work in compliance with all the requirements of the Contract Documents; or
.8 fails after commencement of the Work to proceed continuously with the construction and completion
of the Work for more than ten (10) days, except as permitted under the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, after consultation with the Construction Manager, and upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, ~~seven days' seventy-two (72) hours~~ written notice, terminate employment of the Contractor and ~~may, subject to any prior rights of the surety, may;~~

...

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner in pursuing termination and completion of the Work, including actual attorney and legal fees and costs, 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 amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

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§ 14.4.1 The Owner ~~may, at any time, terminate the Contract for the Owner's convenience and without cause reserves the right to terminate the Contract, or any portion thereof, for convenience and without cause, even though the Contractor has not failed to perform any part of the Contract. Termination of the Work hereunder shall be effected by written notice to the Contractor. Upon receipt of such notice, the Contractor shall, unless the notice otherwise directs:~~

- .1 Immediately discontinue the terminated portion of the Work and the placing of all orders and subcontracts in connection with the terminated portion of the Work;
- .2 Immediately cancel all of the existing orders and subcontracts in connection with the terminated portion of the Work;
- .3 Immediately transfer to the Owner all materials, supplies, Work in progress, appliances, facilities, machinery and tools acquired by the Contractor in connection with the performance of the terminated portion of the Work, and take such action as may be necessary or as the Owner or Construction Manager may direct for protection and preservation of the Work relating to this Contract; and
- .4 Deliver all plans, drawings, specifications and other necessary information to the Owner through the Construction Manager.

§ 14.4.2 ~~Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall~~If the Owner terminates the Contract for convenience, the following shall be the Contractor's exclusive remedies:

- ~~.1 cease operations as directed by the Owner in the notice;~~
14.4.2.1 Reimbursement of all actual expenditures and costs approved by the Owner through the Construction Manager and Architect as having been made or incurred in performing the terminated Work.
- ~~.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.~~
14.4.2.2 Reimbursement of expenditures made and costs incurred with the Owner's prior written approval in settling or discharging outstanding commitments entered into by the Contractor in performing the Contract; and

14.4.2.3 Payment of profit, insofar as profit is realized hereunder, of an amount equal to the estimated profit on the entire Contract at the time of termination multiplied by the percentage of completion of the Work. In no event shall the Contractor be entitled to anticipated fees or profits on Work not required to be performed.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed. All obligations of the Contractor under the Contract with respect to completed Work, including but not limited to all warranties, guarantees, indemnities, insurance and bonds shall apply to all Work completed or substantially completed by the Contractor prior to a convenience termination by the Owner. Notwithstanding the above, any convenience termination by the Owner or payments to the Contractor shall be without prejudice to any claims or legal remedies that the Owner may have against the Contractor for any cause.

§ 14.4.4 Upon a determination that a termination of this Contract, other than a termination for convenience under this Paragraph 14.4, was wrongful or improper for any reason, such termination shall automatically be deemed converted to a convenience termination under this Paragraph 14.4, and the Contractor's remedy for such wrongful termination shall be limited to the recoveries specified under Subparagraph 14.4.2.

§ 14.4.5 Contractor is required to include a termination for convenience clause in all of its Subcontractor and Supplier contracts, in substantially similar form as set forth in this Paragraph 14.4, and that limits the Subcontractors and Suppliers to exclusive remedies no greater than those set forth in Subparagraph 14.4.2 that are available to Contractor. Contractor shall bear all costs arising or related to its failure to include such clause in its Subcontracts.

...

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, 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-Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 Notice of Claims. Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Construction Manager and/or Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated-Contractor must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant-Contractor first recognizes the condition giving rise to the Claim, whichever is later-is later, provided, however, that the Contractor shall use its best efforts to furnish the Construction Manager, Architect, and the Owner, as expeditiously as possible, with notice of any Claim including, without limitation, those in connection with concealed or unknown conditions, as soon as such Claim is recognized. Contractor shall cooperate with the Construction Manager, Architect, and the Owner in any effort to mitigate the alleged or potential damages, delay or other adverse consequences arising out of the condition that is the cause of the Claim. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

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§ 15.1.4 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. A Project delay shall not be a basis for a Claim for additional costs. Delays may be remedied only through an extension of time per Section 15.1.5.

...

~~§ 15.1.6 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 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.~~

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial ~~decision-interpretation~~. The Architect 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-interpretation~~ shall be required as a condition precedent to ~~mediation of any Claim-litigation of any Claim brought by the Contractor against the Owner~~ arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no ~~decision-interpretation~~ having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not ~~decide-interpret~~ 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. Within ten (10) days or written request, the Contractor shall make available to the Owner or its representative all of its books, records, or other documents in its possession or to which it has access relating to a Claim and shall require its Subcontractors and Suppliers, regardless of tier, to do the same.

§ 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-an interpretation~~. 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 such 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-will, based on its interpretation,~~ either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial ~~decision-interpretation~~ approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial ~~decision-interpretation~~ shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager 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-subject to the parties' agreed upon dispute resolution process.~~

§ 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. Notwithstanding anything herein to the contrary, claims of the Owner shall be governed in accordance with the statute of limitations periods under Michigan Law.~~

~~§ 15.2.6.1~~ Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, 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-Owner, Architect or initial Decision Maker 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 except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

~~§ 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. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

~~§ 15.3.3~~ 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.

~~§ 15.4 Arbitration~~

~~§ 15.4.1~~ If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

~~§ 15.4.1.1~~ A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

~~§ 15.4.2~~ The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

~~§ 15.4.3~~ The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

~~§ 15.4.4 Consolidation or Joinder~~

~~§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.~~

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, _____, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 11:43:53 on 08/24/2011 under Order No. 4038040027_1 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A232™ – 2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

**BARTON MALOW COMPANY
CONTRACTOR
INSURANCE REQUIREMENTS**

For agency work
March 10, 2008

1. As a condition of performing work under the Agreement, Contractor will keep in force, at all times during performance of the Work, policies of insurance covering all Basic Insurance Requirements and any applicable Supplemental Insurance Requirements. The requirements identified below are minimum requirements. If the Agreement or other Contract Documents impose additional or higher standards, Contractor shall meet those as well. Where a Controlled Insurance Program ("CIP") is specified in the Contract Documents, these insurance requirements shall not apply to coverages supplied by the CIP, but shall apply to coverages which Contractor is required to carry outside the scope of the CIP.
2. **Basic Insurance Requirements**
 - 2.1. Workers' Compensation covering Contractor's statutory obligations in the State(s) in which the Work is to be performed or Federal statutory obligations, if applicable to the Project, and Employers' Liability insurance with limits of liability of \$1,000,000 EL Each Accident, EL Disease – Each Employee, and EL Disease – Policy Limit. Where applicable, a US Longshore and Harborworker's Compensation Act endorsement must be included.
 - 2.1.1. If Contractor employs the services of leased employees for the Work or for a portion of the Work, it will be required to submit evidence, to the satisfaction of Barton Malow Company, that such leased employees are fully covered by the minimum limits of Workers' Compensation and Employers' Liability Insurance. Such evidence shall include, but not be limited to, submission of the applicable leasing agreement.
 - 2.2. Automobile Liability insurance with the limit of \$1,000,000 per accident covering Contractor's owned, non-owned and hired automobiles.
 - 2.3. Commercial General Liability insurance written on the 1988 ISO OCCURRENCE policy form or subsequent versions with limits of liability as follows:

General Aggregate	\$ 2,000,000
Products-Completed Operations Aggregate	\$ 2,000,000
Personal/Advertising Injury	\$ 2,000,000
Each Occurrence	\$ 2,000,000

This coverage shall include coverage for premises-operations, independent contractors' protective, products and completed operations, personal injury and broad form property damage (including coverage for explosion, collapse, and underground hazards), and Contractual Liability protection with respect to Contractor's indemnification obligations under the Contract Documents. Products-completed operations coverage must be maintained for at least two years after final completion of the Project.
3. **Supplemental Insurance Requirements**
 - 3.1. Watercraft Protection and Indemnity Liability insurance if any of the Work is on or over navigable waterways or involves use of any vessel. Limits are to be approved by Barton Malow Company in writing.
 - 3.2. Aircraft Liability insurance if any aircraft is used in performance of the Work. Limits are to be approved by Barton Malow Company in writing.
 - 3.3. Railroad Protective Liability insurance if any of the Work is on or within 50 feet of any railroad or affects railroad property, including but not limited to tracks, bridges, tunnels, and switches. Limits are to be approved by Barton Malow Company in writing.
 - 3.4. Professional Liability insurance, if Professional Services are provided, with limits of liability as follows:

Each Claim	\$ 5,000,000
Aggregate	\$ 5,000,000

Provided, however, that if the Subcontract Price is \$10,000,000 or less, then the following limits of liability shall apply:

Each Claim	\$ 2,000,000
Aggregate	\$ 2,000,000

Contractor shall keep such Professional Liability insurance in force during the Agreement, and for three years after final completion of the Project.
 - 3.5. Pollution Liability insurance, which must be on an occurrence basis, if Environmental Services are provided. "Environmental Services" means any abatement, removal, remediation, transporting, or disposal of a Hazardous Material, or any assessments or consulting relating to same. Limits of liability for Pollution Liability insurance shall be as follows:

Each Occurrence	\$ 5,000,000
Aggregate	\$ 5,000,000
4. **General Provisions**
 - 4.1. Every policy must be written by an insurance company licensed in the state where work is being done and is reasonably acceptable to Barton Malow Company and Owner.
 - 4.2. Limits for Employer's Liability, Commercial General Liability and Automobile Liability may be attained by a combination of an underlying policy with an umbrella or excess liability policy.

- 4.3. "Barton Malow Company," Owner, and all other entities as required in the Contract Documents shall be endorsed as additional insureds on Contractor's liability insurance (including general liability, excess liability, automobile liability and pollution liability, where applicable) with respect to liability arising out of activities, "operations" or "work" performed by or on behalf of Contractor, including Barton Malow Company's general supervision of Contractor, products and completed operations of Contractor, and automobiles owned, leased, hired or borrowed by Contractor. The coverage provided by the additional insured endorsement shall be at least as broad as the Insurance Service Office, Inc.'s Additional Insured, Form B CG 20 10 11 85 or CG 20 26 11 85. Forms that do not provide additional insured status for completed operations will not be accepted. In no case shall any additional insured endorsement exclude coverage for Barton Malow Company's or Owner's own negligence nor limit coverage for Barton Malow Company or Owner only to potential liability incurred solely as a result of Barton Malow Company's or Owner's acts or omissions. Furthermore, nothing in the additional insured endorsement shall limit Barton Malow Company's or Owner's products-completed operations coverage to only those liabilities arising from Contractor's "ongoing operations".
- 4.4. Contractor will furnish, before any work is started, certificates of insurance and copies of any additional insured endorsements for Contractor's liability policies showing the required coverages. Receipt by Barton Malow Company of a non-conforming certificate of insurance without objection, or Barton Malow Company's failure to collect a certificate of insurance, shall not waive or alter Contractor's duty to comply with the insurance requirements. Modifications to these insurance requirements will not be effective unless made in a writing executed by an authorized representative of Barton Malow Company. Upon written request by Barton Malow Company, Contractor will provide copies of its insurance policies.
- 4.5. Evidence of the required insurance is to be provided to Barton Malow Company on ACORD Certificate Form 25-S and must indicate:
- 4.5.1. Any coverage exclusions or deviations from the 1988 ISO commercial general liability form or subsequent versions;
- 4.5.2. A Best's rating for each insurance carrier at A minus VII or better;
- 4.5.3. That the issuing insurance company will provide thirty (30) days written notice of cancellation to the certificate holder and the words "endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives" do not apply or have been removed;
- 4.5.4. That additional insured endorsements have been provided as required under the Contract Documents; and
- 4.5.5. Any deductibles over \$10,000 applicable to any coverage.
- 4.6. All coverage must be primary and not excess over or contributory with any other valid, applicable, and collectible insurance or self-insurance in force for Barton Malow Company, Owner, or other additional insureds.
- 4.7. Contractor will provide full coverage for all of Contractor's equipment, property and tools used in the Work.
- 4.8. Contractor shall waive, and shall require (by endorsement or otherwise) its insurers providing the coverage required by these insurance requirements to waive, subrogation rights against Barton Malow Company, Owner, and all other additional insureds for losses and damages incurred and/or paid under the insurance policies required by these insurance requirements or other insurance applicable to Contractor or its Subordinate Parties, and will include this same requirement in contracts with its Subordinate Parties. If the policies of insurance referred to in this paragraph require an endorsement to provide for continued coverage where there is a waiver of subrogation, the owners of such policies will cause them to be so endorsed.
- 4.9. Contractor will send or fax a copy of these insurance requirements to its agent when an insurance certificate is requested to assure that the policies comply with the insurance requirements.
- 4.10. If Contractor requires its Subordinate Parties to provide additional insured endorsements in favor of Contractor, those endorsements shall be extended to Barton Malow Company, Owner and all other required additional insureds.
- 4.11. Contractor's duty to provide the insurance coverage set forth in these insurance requirements is a severable obligation from Contractor's indemnification obligations under the Contract Documents. Nothing in these insurance requirements shall be deemed to limit Contractor's liability under the Agreement.
- 4.12. If these insurance requirements are used in conjunction with a Project where an Affiliated Company of Barton Malow Company is acting as Construction Manager, Design Builder or otherwise (the "Construction Entity"), the term "Barton Malow Company" as used in these insurance requirements shall be deemed to be replaced with the name of the Construction Entity, and the additional insured requirements of Section 4.3 above shall be amended to include "Barton Malow Company", and all partners and/or members of the Construction Entity as applicable. "Affiliated Company" means any entity in which Barton Malow Company has an ownership interest.

DRAFT AIA® Document A132™ - 2009

Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition

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

BETWEEN the Owner:
(Name, legal status, address and other information)

«New Haven Community Schools»
«30375 Clark Street
P.O. Box 482000
New Haven, MI 48048
Troy School District
4400 Livernois
Troy, MI 48098»
«Telephone Number: 248-823-4000/586-749-5123»
«Fax Number: 248-823-4013/586248-749-6307»

and the Contractor:
(Name, legal status, address and other information)

« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

«Troy School District – 2013 Bond Program
New Haven Community Schools»
« »
« »

The Construction Manager:
(Name, legal status, address and other information)

«Barton Malow Company»
«24200 F.V. Pankow Blvd.
Clinton Township, MI 48036»
« »
« »

The Architect:
(Name, legal status, address and other information)

«TMP Architecture Inc
1191 West Square Lake Road
Bloomfield Hills, MI 48302
Fanning-Howey»
«28001 Cabot

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.

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 A232™-2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™-2009, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™-2009, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

AIA Document A232™-2009 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

Suite 110

Novi, MI 48377»

«Telephone Number: 248-338-4561 248 848 0123»

«Fax Number: 248-338-0223 248 848 0133»

The Owner and Contractor agree as follows.



TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
6	DISPUTE RESOLUTION
7	TERMINATION OR SUSPENSION
8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS
10	INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

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

<< >>

If, prior to the commencement of the Work, the Owner requires time to file mortgages, mechanics' liens and other security interests, the Owner's time requirement shall be as follows:

<< >>

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than << >> (<< >>) days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

<< >>

Portion of the Work

Substantial Completion Date

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

(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

<< >>

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:

(Check the appropriate box.)

☒ [☒] Stipulated Sum, in accordance with Section 4.2 below

☐ [☐] Cost of the Work plus the Contractor's Fee without a Guaranteed Maximum Price, in accordance with Section 4.3 below

☐ [☐] Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below. Based on the selection above, also complete either Section 5.1.4, 5.1.5 or 5.1.6 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Stipulated Sum shall be ☐ [☐] (\$ ☐ [☐]), subject to additions and deletions as provided in the Contract Documents.

§ 4.2.2 The Stipulated Sum is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

<<
>>

§ 4.2.3 Unit prices, if any:

(Identify and state the unit price, and state the quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.2.4 Allowances included in the Stipulated Sum, if any:

(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Allowance
------	-----------

§ 4.3 Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price

§ 4.3.1 The Contract Sum is the Cost of the Work as defined in Exhibit A, Determination of the Cost of the Work, plus the Contractor's Fee.

§ 4.3.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

←→

§ 4.3.3 The method of adjustment of the Contractor's Fee for changes in the Work:

←→

§ 4.3.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

←→

§ 4.3.5 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rate paid at the place of the Project.

§ 4.3.6 Unit prices, if any:

(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.3.7 The Contractor shall prepare and submit to the Construction Manager for the Owner, in writing, a Control Estimate within 14 days of executing this Agreement. The Control Estimate shall include the items in Section A.1 of Exhibit A, Determination of the Cost of the Work.

§ 4.4 Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price

§ 4.4.1 The Contract Sum is the Cost of the Work as defined in Exhibit A, Determination of the Cost of the Work, plus the Contractor's Fee.

§ 4.4.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

←→

§ 4.4.3 The method of adjustment of the Contractor's Fee for changes in the Work:

←→

§ 4.4.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

←→

§ 4.4.5 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rate paid at the place of the Project.

§ 4.4.6 Unit Prices, if any:

(Identify and state the unit price, and state the quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.4.7 Guaranteed Maximum Price

§ 4.4.7.1 The sum of the Cost of the Work and the Contractor's Fee is guaranteed by the Contractor not to exceed (\$), subject to additions and deductions by changes in the Work as provided in the Contract Documents. Such maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

(Insert specific provisions if the Contractor is to participate in any savings.)

§ 4.4.7.2 The Guaranteed Maximum Price is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

§ 4.4.7.3 Allowances included in the Guaranteed Maximum Price, if any:
(Identify and state the amounts of any allowances, and state whether they include labor, materials, or both.)

Item	Allowance

§ 4.4.7.4 Assumptions, if any, on which the Guaranteed Maximum Price is based:

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and upon certification of the Project Application and Project Certificate for Payment or Application for Payment and Certificate for Payment by the Construction Manager and Architect and issuance by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

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

«the 15th day of each month. All rough drafts are due on or before the 10th day and Three originals, sworn statements and insurance certificates are due on or before the 15th day of each month. NO EXCEPTIONS TAKEN.

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§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the «15th» day of a month, the Owner shall make payment of the certified amount in the Application for Payment to the Contractor not later than the «5th» day of the «second» month following submission. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment shall be made by the Owner not later than «Eighty» («80») days after the Construction Manager receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

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

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

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

- 1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of «Ten» percent

- («10 » %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute may be included as provided in Section 7.3.9 of the General Conditions;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of «Ten » percent («10 » %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of the General Conditions.

§ 5.1.4.4 The progress payment amount determined in accordance with Section 5.1.4.3 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to «Ninety » percent («90 » %) of the Contract Sum, less such amounts as the Construction Manager recommends and the Architect determines for incomplete Work and unsettled claims; and
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of the General Conditions.

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

(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.4.3.1 and 5.1.4.3.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price

§ 5.1.5.1 With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit A, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor; less (2) that portion of those payments attributable to the Contractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.

§ 5.1.5.2 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

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

- .1 Take the Cost of the Work as described in Exhibit A, Determination of the Cost of the Work;
- .2 Add the Contractor's Fee, less retainage of « » percent (« » %). The Contractor's Fee shall be computed upon the Cost of the Work described in that Section at the rate stated in that Section; or if the Contractor's Fee is stated as a fixed sum, an amount which bears the same ratio to that fixed sum Fee as the Cost of the Work bears to a reasonable estimate of the probable Cost of the Work upon its completion;
- .3 Subtract retainage of « » percent (« » %) from that portion of the Work that the Contractor self-performs;
- .4 Subtract the aggregate of previous payments made by the Owner;
- .5 Subtract the shortfall, if any, indicated by the Contractor in the documentation required by Article 5 or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and
- .6 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or withdrawn a Certificate for Payment as provided in Section 9.5 of AIA Document A232™, 2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

~~§ 5.1.5.4 The Owner, Construction Manager and Contractor shall agree upon (1) a mutually acceptable procedure for review and approval of payments to Subcontractors and (2) the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.~~

~~§ 5.1.5.5 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.~~

~~§ 5.1.5.6 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.~~

~~§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price~~

~~§ 5.1.6.1 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor; less (2) that portion of those payments attributable to the Contractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.~~

~~§ 5.1.6.2 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.~~

~~§ 5.1.6.3 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work for which the Contractor has made or intends to make actual payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.~~

~~§ 5.1.6.4 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:~~

- ~~1. Take that portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.10 of AIA Document A232-2009;~~
- ~~2. Add that portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work, or if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing;~~
- ~~3. Add the Contractor's Fee, less retainage of percent (%). The Contractor's Fee shall be computed upon the Cost of the Work at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, shall be an amount that bears the same ratio to that fixed sum fee as the Cost of the Work bears to a reasonable estimate of the probable Cost of the Work upon its completion;~~
- ~~4. Subtract retainage of percent (%) from that portion of the Work that the Contractor self-performs;~~
- ~~5. Subtract the aggregate of previous payments made by the Owner;~~

- ~~.6 Subtract the shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and~~
- ~~.7 Subtract amounts, if any, for which the Construction Manager or Architect have withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A232-2009.~~

~~§ 5.1.6.5 The Owner and the Contractor shall agree upon a (1) mutually acceptable procedure for review and approval of payments to Subcontractors and (2) the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.~~

~~§ 5.1.6.6 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Construction Manager or Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.~~

~~§ 5.1.6.7 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.~~

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2 of AIA Document A232-2009, and to satisfy other requirements, if any, which extend beyond final payment;
- ~~.2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit A, Determination of the Cost of the Work when payment is on the basis of the Cost of the Work, with or without a Guaranteed Maximum payment; and~~
- ~~.3~~ a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect; such final payment shall be made by the Owner not more than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

«Per Manual »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A232-2009, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »
« »
« »
« »

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A232-2009, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[« »] Arbitration pursuant to Section 15.4 of AIA Document A232-2009.

[☒] Litigation in a court of competent jurisdiction.

[☐] Other: (Specify)

« »

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2009.

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2009.

~~§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price~~

~~§ 7.2.1 Subject to the provisions of Section 7.2.2 below, the Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2009.~~

~~§ 7.2.2 The Contract may be terminated by the Owner for cause as provided in Article 14 of AIA Document A232–2009; however, the Owner shall then only pay the Contractor an amount calculated as follows:~~

- ~~.1 Take the Cost of the Work incurred by the Contractor to the date of termination;~~
- ~~.2 Add the Contractor's Fee computed upon the Cost of the Work to the date of termination at the rate stated in Sections 4.3.2 or 4.4.2, as applicable, or, if the Contractor's Fee is stated as a fixed sum, an amount that bears the same ratio to that fixed sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion; and~~
- ~~.3 Subtract the aggregate of previous payments made by the Owner.~~

~~§ 7.2.3 If the Owner terminates the Contract for cause when the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, and as provided in Article 14 of AIA Document A232–2009, the amount, if any, to be paid to the Contractor under Section 14.2.4 of AIA Document A232–2009 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.2.~~

~~§ 7.2.4 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders.~~

~~§ 7.2.5 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2009; in such case, the Contract Sum and Contract Time shall be increased as provided in Section 14.3.2 of AIA Document A232–2009, except that the term "profit" shall be understood to mean the Contractor's Fee as described in Sections 4.3.2 and 4.4.2 of this Agreement.~~

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2009 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

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

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

« 0 » % «Zero »

§ 8.3 The Owner's representative:

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User Notes:

(1748318584)

(Name, address and other information)

«Ken Miller
1140 Rankin Dr.
Troy, MI 48083→
«30375 Clark Street
P.O. Box 482000
New Haven, MI 48048»

« »
« »
« »
« »

§ 8.4 The Contractor's representative:
(Name, address and other information)

« »
« »
« »
« »
« »
« »

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

«NONE»

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A132–2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition.

§ 9.1.2 The General Conditions are, AIA Document A232–2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
Refer to Attachment "A"			

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

« »

Section	Title	Date	Pages
Refer to Attachment "A"			

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

« »

Number	Title	Date
Refer to Attachment "A"		

§ 9.1.6 The Addenda, if any:

Number	Date	Pages
Refer to Attachment "A"		

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

~~§ 9.1.7 Additional documents, if any, forming part of the Contract Documents are:~~

- ~~.1 AIA Document A132™ 2009, Exhibit A, Determination of the Cost of the Work, if applicable.~~
~~.2 AIA Document E201™ 2007, Digital Data Protocol Exhibit, if completed, or the following:~~



- ~~.3 AIA Document E202™ 2008, Building Information Modeling Protocol Exhibit, if completed, or the following:~~



- .41 Other documents, if any, listed below:

(List here any additional documents which are intended to form part of the Contract Documents. AIA Document A232–2009 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

~~«Post Bid Review dated:
Attachment "A" dated: »~~

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ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A232–2009.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A232–2009.)

Type of Insurance or Bond	Limit of Liability or Bond Amount (\$0.00)
Refer to Project Manual	

This Agreement is entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

« »« »

(Printed name and title)

SECTION 00810
ON-SITE PROJECT SAFETY AND LOSS CONTROL PROGRAM

1 SUBCONTRACTOR'S SAFETY REQUIREMENTS

1.01 Generally the Subcontractor

- 1.01.1 is responsible for its own Safety Program for Work on this Project that is at least as stringent as the requirements set forth in this section of the Project Manual.
- 1.01.2 shall provide a safe workplace and shall otherwise take all precautions for the safety of Subordinate Parties and persons and property in or near the premises where Work is being performed.
- 1.01.3 shall comply with all applicable federal, state and local laws, rules and regulations, including, but not limited to, applicable provisions of the Occupational Safety and Health Act ("OSHA") and/or the governing state law.
- 1.01.4 shall comply with all requirements stated in the Site Specific Safety Instructions (SSSI) form or elsewhere in the Contract Documents.
- 1.01.5 shall ensure that its employees understand and comply with applicable safety and health programs, rules, and regulations.
- 1.01.6 will assign an individual to act as Safety Representative who will have the responsibility of resolving safety matters, and act as a liaison among Subcontractor, CM and the Owner. The Safety Representative must be a person who is capable of identifying existing and predictable hazards in surroundings that are unsanitary, hazardous or dangerous to employees, and has the authority to take prompt corrective measures to eliminate them. The Safety Representative must meet the standards for a Competent Person under applicable law when required (scaffolding, confined spaces, etc.). The Safety Representative must be on site full time. The Safety Representative or an alternate must attend periodic safety meetings as directed by CM. The safety representative must have completed the OSHA 30 hour Construction Training Course.
- 1.01.7 shall ensure that its site supervisors and/or Safety Representative attend a pre-construction meeting where planning for safe execution of the project will be addressed.
- 1.01.8 is fully responsible for all Hazardous Materials it creates or releases in connection with, or brings to, the Project. Subcontractor shall immediately report to CM any Hazardous Materials that it discovers or which are released at the Project.
- 1.01.9 Minimum training for on-site employees shall include basic safety orientation, task-specific safety instruction, weekly Tool Box Talks, and other periodic safety meetings. Subcontractor shall document all such training.
- 1.01.10 shall self-inspect its areas of control to assure compliance with the safety requirements.
- 1.01.11 All on-site employees of either Subcontractor] or its Subordinate Parties are required to report any unsafe act or condition and any work-related injuries or illness immediately to a supervisor. If the act or condition can be safely and easily corrected, the employee or supervisor should make the correction.
- 1.01.12 shall notify CM immediately of all injuries requiring clinical attention and all property damage potentially in excess of \$1,000.
- 1.01.13 shall have emergency procedures to deal with the immediate removal and treatment, if necessary, of any employee who may be injured or become ill. Subcontractor] shall keep on the Project site a first-aid kit supplied according to current regulations, and shall have on-site a person trained to administer first aid.
- 1.01.14 shall inform CM of the arrival of any federal or state inspector or compliance officer prior to touring the site. Any reports, citations, or other documents related to the inspection shall be provided promptly to Barton Malow.

- 1.01.15 shall have a written Substance Abuse Policy. The use or possession of illegal drugs or the use of alcohol while performing Work on the Project are strictly prohibited and will lead to immediate removal from the Project.
- 1.01.16 shall be responsible for payment of all safety-related citations, fines and/or claims arising out of or relating to its Work levied against the Owner, Architect, CM, or their employees or affiliates.
- 1.01.17 CM has the right to require that Subcontractor H submit monthly its hours worked and incident rates for the Project.
- 1.02 Additional CM Requirements
 - 1.02.1 Work crews shall conduct a Job Hazard Analysis (JHA,) discussion (i.e. Huddle) to plan for safe performance before beginning any work task. Subcontractor is required to prepare a written record of each JHA.
 - 1.02.2 All workers, management, and visitors shall wear approved hard hats while on site, outside the trailers. Cowboy-style hard hats are prohibited. Hardhats must not be removed to use welding shields. Welding shields must attach to hardhats or be hand held.
 - 1.02.3 Sleeved shirts (minimum of four inches), long pants, and durable work boots are required minimum clothing.
 - 1.02.4 Personal cell phones are not to be used on construction sites except to report an emergency or on approved break time. Use of business cell phones must not interfere with jobsite safety.
 - 1.02.5 Personal radios or music players are not permitted.
 - 1.02.6 All persons working at elevations of six feet or greater must have 100% continuous fall protection. Engineering controls are preferred, but personal fall arrest systems are also permissible. An exception is permitted for safe use of ladders up to 24 feet long.
 - 1.02.7 Subcontractor is responsible to repair or restore any barricade that it modifies or removes.
 - 1.02.8 Class II III (household) stepladders are prohibited; metal ladders are strongly discouraged.
 - 1.02.9 All scaffolds must be inspected daily and before each use for safety compliance. Scaffold inspection tags must be used. Scaffolds shall never be left in an unsafe condition and must be removed/disabled immediately if not to be used again.
 - 1.02.10 All persons operating cranes must be certified as crane operators by the National Commission on the Certification of Crane Operators (NCCCO), Crane Institute Certification (CIC) or Operating Engineers Certification Program (OCEP). Daily written crane inspection reports must be prepared by the operator and kept with the crane, available for inspection.
 - 1.02.11 Riding the headache ball is prohibited.
 - 1.02.12 All dozers, loaders, tractors and end loader backhoes must have functioning backup alarms.
 - 1.02.13 Keep equipment at least 15 feet from energized power lines.
 - 1.02.14 Electrical, pneumatic, and other energy systems that could be accidentally energized or started up while work is in process must be locked out (not merely tagged out).
 - 1.02.15 Only fire retardant materials may be used to build shanties or other temporary enclosures inside of buildings finished or under construction. Shanties shall be continually policed by their occupants to prevent the accumulation of waste or other combustibles.
 - 1.02.16 Engineering controls must be used to restrain silica dust per applicable law. Dry cutting without engineering controls is prohibited.
 - 1.02.17 The Contractor is required to design and implement a Stretch and Flex program for their employees. The purpose of the program is to gently condition the muscles and tendons for the workers before they engage in their duties in order to avoid injury. All contractors of any tier shall ensure that all employees participate in stretching exercises at the beginning of the work

day. It is recommended that you consult with your insurance carrier, licensed physician or other medical personnel to develop suitable stretches for your work crew.

- 1.02.18 The Contractor is required to implement a glove program. All workers performing construction work must wear appropriate protective work gloves. When not performing work gloves must be kept available for immediate use. Cut resistant work gloves are required for any operation with sharp material or cut potential.

2 Subcontractor's SAFETY SUBMITTALS

- 2.01 Subcontractors shall provide copies of the following written safety submittals to CM at the times indicated:

Submittal	Timing
Contractor Safety Certificate, Barton Malow form SAF 6.3.3.3	Before on-site work begins
Site-specific Safety Program, including substance abuse policy, hazard communication program, and Material Safety Data Sheets (MSDS)	Before on-site work begins
Tool Box Talk Reports	Weekly
Incident Reports (OSHA form 301 or equivalent)	Within 24 hours of incident
Hours worked and incident rates	Monthly
Stretch and Flex program	Before on-site work begins

- 2.02 Barton Malow's receipt of the Safety Program or other submittals from Subcontractor does not constitute approval of the Program or submittal or permission to deviate from the requirements of the Contract Documents and applicable law.
- 2.03 Subcontractor will allow inspection of, and CM may request copies of, any and all safety-related documents and records in its possession relating to the Project.

3 CM RIGHTS

- 3.01 **Safety Hazard Notifications** may be issued to the Subcontractor when an unsafe act or condition is reported or observed. CM shall not be required to supervise the abatement or associated reprimand of unsafe acts or conditions within a Subcontractor's scope of work as this is solely the responsibility of Subcontractor. Nevertheless, CM has the right, but not the obligation, to require Subcontractor to cease or abate any unsafe practice or activity it notices, at Subcontractor's sole expense.
- 3.02 Contractor/Subcontractor's failure to comply with the contract safety requirements will be considered a default of the Agreement, and may result in remedial action including, but not limited to, withholding of payment of any sums due or termination.
- 3.03 CM's failure to require the submission of any form, documentation, or any other act required under this Section, 00810, of the Project Manual shall not relieve the Subcontractor from any of its safety obligations.
- 3.04 Nothing in this Section or in this Agreement makes CM responsible or liable for protecting Subcontractor's employees and other Subordinate Parties or assuring or providing for their safety or preventing accidents or property damage.
- 3.05 All requirements referenced in this Section 00810 are binding on Subcontractor and all of its Subordinate Parties, even where such requirements may exceed the standards of applicable law.

END OF SECTION 00810

CONTRACTOR SAFETY CERTIFICATE

Contractor Name _____

Project Name TSD 2013 Bond – Series 1, BP7 Secure Entrance Renovation and Theater Upgrades at Troy High School _____

Project Number 140077 – BP7 _____

Nature of work (e.g., masonry, drywall) _____

1. Does Contractor have a written safety plan applicable to this Project?
☐ Yes (attach copy); or ☐ Will be provided before on-site work begins.
2. Contractor agrees to follow on this Project (for itself and its subs at any tier):
 - a. All applicable legal standards for safety, including OSHA and state law;
 - b. Any Site Specific Safety Information furnished for this Project;
 - c. 100% continuous fall protection at elevations over six feet;
 - d. NCCCO certification for all crane operators;
 - e. Job Hazard Analysis to plan for safety before each work task begins;
 - f. Prompt reporting of all OSHA recordable and lost time injuries, plus monthly reports of work hours and incident rates;
 - g. Commitment of adequate management and financial resources to assure safety compliance and enforcement.☐ Yes (no other alternative).
3. Contractor expects to encounter the following potential hazards on this Project, and its written safety plan contains appropriate provisions to address them:

	Potential Hazard	Yes	No	Name the Competent Person*
1	Work from heights (ladders, edges, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	
2	Scaffold erection or use	<input type="checkbox"/>	<input type="checkbox"/>	
3	Aerial work platforms	<input type="checkbox"/>	<input type="checkbox"/>	
4	Energized equipment (electrical, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	
5	Respirator use	<input type="checkbox"/>	<input type="checkbox"/>	
6	Confined space work	<input type="checkbox"/>	<input type="checkbox"/>	
7	Trenching/excavation	<input type="checkbox"/>	<input type="checkbox"/>	
8	Cranes, fork trucks, or heavy equipment	<input type="checkbox"/>	<input type="checkbox"/>	
9	Environmental hazards	<input type="checkbox"/>	<input type="checkbox"/>	
10	Fire or explosion hazards	<input type="checkbox"/>	<input type="checkbox"/>	
11	Aircraft or watercraft use	<input type="checkbox"/>	<input type="checkbox"/>	
12	Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>	

* Where applicable, properly qualified and trained individual who will assure compliance with pertinent standards, procedures, and/or training requirements.

4. Contractor has established procedures for handling first aid and other occupational injuries including medical and fire emergencies.

Name of person certified in first aid and CPR: _____

I certify that the above information is correct, and I accept responsibility for implementing and enforcing the safety plan on this Project.

Contractor's Representative

Phone Number

Date



SITE-SPECIFIC SAFETY INFORMATION (SSSI) FORM
ZERO TOLERANCE FOR UNSAFE ACTS OR CONDITIONS

PROJECT IDENTIFICATION

Owner Name: Troy School District
Jobsite Location: Multible
Jobsite Phone (voice):

Project Name: 2013 Bond
BMC Project No.: 140077
Jobsite Fax:

PROJECT OPERATIONAL LEADERSHIP

Title	Name	Office Phone #	Cell Phone #	24-hour contact #
Project Director	Ron Curtis	586.405.3944	586.405.3944	
Project Manager	Doug Madden/Kendra Fecho	248.219.4295/586.557.2263	586.405.3944	586.405.3944
Project Engineer	Gerrit Littrup		248.417.8952	248.417.8952
Superintendent	Doug Madden/Keith Merritt	248.219.4295/248.866.0344	810.217.6501	810.217.6501
Safety Representative	Jim Fraley	248.436.5284		
Owner's Representative	Ken Miller	248-823-4050	248.961.4750	248.961.4750

EMERGENCY RESPONSE INFORMATION

Key Phone Numbers

Emergency response (medical/fire): 911
Police Dept. (non-emergency): 248.524.3477
Fire Dept. (non-emergency): 248.534.3419
Security Service: Audio Sentry Security-586.294.2941

Injury Response

Certified First Aid Provider at Jobsite:

Name: Cell:

Location of First Aid Equipment: Each Job-site

Nearest Hospital: William Beaumont Hospital, 44201 Dequindre Rd. Troy MI.

Directions to Hospital: South of South Blvd, west side of Dequindre

Hospital phone number: 248.964.5000

Recommended Clinic: Cocentra

Directions to Clinic: 627 E., Maple

Clinic phone number: 248.524.1912

Clinic hours: 7:00 AM-7:00 PM M-F 9:00 AM-1:00 PM sat. All Clear:

BMC Safety Department: 248-436-5488

Other emergency information:

Utilities

Gas Company: Consumers 800.477.5050

Electric Company: DTE 800.477.4747

Water Company: Troy Water Division-248.524.3370

Evacuation/Rescue

Location of rescue equipment:

Gathering point after evacuation:

Severe weather shelter:

Emergency Signals

Evacuation (fire, bomb, etc):

Seek Shelter (weather):

OTHER SITE-SPECIFIC SAFETY INFORMATION

(If not applicable or no additional information beyond Contract Documents, leave item blank.)

- 1) General Safety Requirements. Each Contractor on the jobsite is required to observe all applicable laws and contractual duties, including Section 00810 of the Project Manual and any procedures or other requirements set forth in this SSSI form or its Exhibits. Nothing stated in or omitted from this SSSI form excuses compliance with requirements stated elsewhere in the Contract Documents. The failure to identify a safety condition in this document does not represent or warrant that no such condition is present.
- 2) Postings. Notices required by federal or state law regarding safety, employment, and other matters will be posted on a bulletin board at the following jobsite location: BMC field office 1140 Rankin, Troy MI. 48083.
- 3) MSDS forms. Material Safety Data Sheet (MSDS) information for all Contractors will be maintained at the following jobsite location: BMC field office 1140 Rankin, Troy MI. 48083
- 4) Owner Requirements. Special Owner safety requirements for this project are:
 - a) ☐ Attached as Exhibit SSSI-4; or
 - b) ☐ Stated here:
- 5) Insurance. Is this project covered by a Controlled Insurance Program (CIP)?
 - a) ☐ Yes, an Owner Controlled Insurance Program (OCIP)
 - b) ☐ Yes, a Contractor Controlled Insurance Program (CCIP)
 - c) ☐ No CIP
 - d) CIP procedures or other special insurance procedures are:
 - i) ☐ Attached as Exhibit SSSI-5; or
 - ii) ☐ Stated here:
- 6) Employees. Information on employee requirements specific to this jobsite (jobsite safety orientation, identification badges, drug testing, etc.) is:
 - a) ☐ Attached as Exhibit SSSI-6; or
 - b) ☐ Stated here:
- 7) Planning. Information on special requirements for safety planning (e.g., written job hazard analysis or pre-task planning) is:
 - a) ☐ Attached as Exhibit SSSI-7; or
 - b) ☐ Stated here:
- 8) Jobsite Access. Information relating to site access (parking, pedestrians, deliveries, heavy equipment, traffic control, emergency vehicle access, etc.) is:
 - a) ☐ Attached as Exhibit SSSI-8; or
 - b) ☐ Stated here:
- 9) Jobsite Security. Information relating to jobsite security procedures (security services, visitor policy, etc.) is:
 - a) ☐ Attached as Exhibit SSSI-9; or
 - b) ☐ Stated here:
- 10) Staging and Laydown. Information on staging and laydown areas at the jobsite is:
 - a) ☐ Attached as Exhibit SSSI-10; or
 - b) ☐ Stated here:
- 11) Cranes. Special requirements associated with crane access or placement at the jobsite are:
 - a) ☐ Attached as Exhibit SSSI-11; or
 - b) ☐ Stated here:

- 12) Environmental Hazards. Information on hazards and procedures associated with environmental conditions at the jobsite (including known or suspected hazardous materials, toxic chemicals, pollutants, etc.) is:
- a) ☐ Attached as Exhibit SSSI-12; or
 - b) ☐ Stated here:
- 13) Utilities. Information on hazards and procedures associated with underground or overhead utilities at the jobsite is:
- a) ☐ Attached as Exhibit SSSI-13; or
 - b) ☐ Stated here:
- 14) Risks to or from Property. Information on structures, animals, plants, habitats, artifacts, or other property, on or near the jobsite, which either present a hazard or must be protected from damage, is:
- a) ☐ Attached as Exhibit SSSI-14; or
 - b) ☐ Stated here:
- 15) Sitework. Information on management of stormwater or sediment runoff at this jobsite is:
- a) ☐ Attached as Exhibit SSSI-15; or
 - b) ☐ Stated here:
- 16) Underground. Information on known or suspected unusual conditions in the soil or underground at this jobsite is:
- a) ☐ Attached as Exhibit SSSI-16; or
 - b) ☐ Stated here:
- 17) Interim Life Safety. Information on how interim life safety measures will be handled during construction is:
- a) ☐ Attached as Exhibit SSSI-17; or
 - b) ☐ Stated here:
- 18) Fire Protection. Information on fire hazards and procedures specific to this jobsite is:
- a) ☐ Attached as Exhibit SSSI-18; or
 - b) ☐ Stated here:
- 19) Confined Spaces. Information on confined spaces at the jobsite and procedures for safe entry is:
- a) ☐ Attached as Exhibit SSSI-19; or
 - b) ☐ Stated here:
- 20) Energy Lockout/Tagout. Information on hazards from energized systems (electrical, machinery, high pressure piping, etc.) and lockout/tagout procedures is:
- a) ☐ Attached as Exhibit SSSI-20; or
 - b) ☐ Stated here:
- 21) Infection Control. Information on special procedures for infection control is:
- a) ☐ Attached as Exhibit SSSI-21; or
 - b) ☐ Stated here:
- 22) Hazardous Operations. Information on unusual or hazardous construction methods or other dangerous operations at or near the jobsite (demolition, blasting, etc.) is:
- a) ☐ Attached as Exhibit SSSI-22; or
 - b) ☐ Stated here:
- 23) Other. Other information on hazards or safety-related procedures or requirements for the jobsite is:
- a) ☐ Attached as Exhibit SSSI-23; or
 - b) ☐ Stated here:

SECTION 00840 HAZARDOUS MATERIALS

1. DEFINITION OF HAZARDOUS MATERIALS

- 1.1. A “Hazardous Material”, as used in this Project Manual means asbestos; asbestos containing material; lead (including lead-based paint); PCB; molds; any other chemical, material, or substance subject to regulation as a hazardous material, hazardous substance, toxic substance, or otherwise, under applicable federal, state, or local law; and any other chemical, material, or substance that may have adverse effects on human health or the environment.

2. AWARENESS OF HAZARDOUS MATERIALS

- 2.1. Each Contractor shall be constantly aware of the possible discovery of Hazardous Materials. Should Contractor encounter any Hazardous Material or suspected Hazardous Material, the Contractor shall immediately stop Work in the area affected and report the condition to CM.
- 2.2. If the Contractor encounters any Hazardous Material or suspected Hazardous Material, the Contractor agrees to immediately initiate the required procedures of the Environmental Protection Agency (EPA), and/or state or local agencies having jurisdiction to protect any and all persons exposed to the affected areas or adjacent areas affected thereby
- 2.3. Contractor is fully responsible for all Hazardous Materials it creates or releases in connection with, or brings to, the Project
- 2.4. Each Contractor shall be responsible to bind ALL of its personnel and its Subordinate Parties to the provisions in the contract documents related to hazardous materials and to instruct each employee of its own duty to report any and all suspected Hazardous Materials and to comply with all applicable laws.
- 2.5. ABSOLUTELY NO MATERIAL SHALL BE BROUGHT ON OR TO THE PROJECT SITE THAT DOES NOT HAVE A MANUFACTURER'S LABEL STATING CONTENTS.
- 2.6. The Contractor shall comply with all applicable federal and state laws, rules, ordinances and regulations regarding transportation, storage, spills, releases and disposal of Hazardous Materials.
- 2.7. No asbestos or asbestos-containing material will be brought to the jobsite or incorporated into the Work by Contractor or its Subordinate Parties.

END OF SECTION 00840

SECTION 00870 LABOR RELATIONS

1. PREVAILING WAGES

- 1.1. In any Agreement entered into pursuant to this advertisement, the Contractor shall comply with the provisions of the PREVAILING WAGE LAW.
 - 1.1.1. The Contractor will pay the latest prevailing wages and fringe benefits for all Work as required by State of Michigan/Public Act 166 dated 1965 as amended. The prevailing wage and fringe benefit rates are included immediately behind this Section
- 1.2. Additionally, **Contractor** is required to comply with all other provisions of the governing prevailing wage law, and shall ensure its Subordinate Parties' compliance therewith.
- 1.3. Allegations that individuals working on this Project are not receiving compensation required by law are considered seriously by the Owner and CM. In order to expedite the resolution of prevailing wage complaints related to this Project, the Owner and CM have determined that the Michigan Fair Contracting Center ("MFCC") is the organization best equipped to expedite the investigation of these matters. Any person or entity (the "Complainant") who reasonably believes that a particular contractor, subcontractor, supplier or other person or entity providing labor, materials, goods or services on this Project (each, an "Employer") is not paying prevailing wages as required by applicable law may ask the MFCC to determine whether proper rates are being paid either by completing and submitting to MFCC a request for assistance (the "RFA") or by contacting MFCC by telephone at (734) 462-2330 or (877) 611-6322. The RFA can be downloaded electronically at <http://mifcc.org/Brochures/KnowYourRights.pdf> and delivered to MFCC by facsimile to (734) 462-2318 or by mail to P.O. Box 530492, Livonia, Michigan 48153-0492.
- 1.4. Each and every Employer who is subject to an audit by MFCC pursuant to any RFA shall cooperate and comply fully with all requests, requirements and inquiries of MFCC. If, after investigation, MFCC determines that a Complainant's allegations are meritorious and the Complainant, MFCC and the Employer are unable to resolve the dispute following MFCC's determination, then, under the direction and with the assistance of MFCC, the Complainant shall file a Prevailing Wage Complaint (the "PWC") with the State of Michigan Department of Labor and Economic Growth Wage and Hour Division (the "Wage and Hour Division"). The PWC can be downloaded electronically at <http://mifcc.org/Brochures/PrevailingWageComplaint.pdf> and delivered by facsimile to (517) 322-6352 or by mail to 7150 Harris Drive, P.O. Box 30476, Lansing, Michigan 48909-7076.
 - 1.4.1. Upon commencement of the audit from MFCC, the Owner and/or CM reserves the right to hold all payments, pending the conclusion of the audit. If the Wage and Hour Division determines that the Employer has violated any applicable prevailing wage law, then the Owner and/or Construction Manager shall automatically be entitled to and will (a) withhold from such Employer any and all payments due and owing until the Employer remedies any and all violations cited by the Wage and Hour Division, and (b) backcharge the Employer for all costs actually incurred in MFCC's audit of the Employer.
 - 1.4.2. The Owner and/or CM shall keep a hard copy of these requirements posted at the Project site at all times.
- 1.5. The Contractor shall be financially responsible for the payment of prevailing wages by all Subordinate Parties that are subject to the prevailing wage law for Work on the Project.
- 1.6. If there is a dispute between any Contractor and the unions, the Contractor will be required to meet with CM and the Union involved to try and resolve the issue.
- 1.7. Because Work on this Project is covered by the Michigan Prevailing Wage Act ("Act"), the Contractor and its subcontractors and other Subordinate Parties that are governed by the prevailing wage law shall pay all hours at the prevailing wage rates at the applicable hourly rate; no Work performed by or on behalf of the Contractor on this Project will be paid on a lump sum basis or a piece rate basis in violation of the Act.

- 1.8. The Contractor will pay its workers at wage and fringe benefit rates consistent with the Act regardless of whether the workers are classified as employees or independent contractors.
- 1.9. The Contractor shall not misclassify any work assignments, but shall in each and every case follow proper jurisdictional assignments in compliance with the Act.
- 1.10. The Contractor shall assure that any persons paid at apprentice rates under the Act are properly classified as apprentices by actual participation in a BAT certified program or as may otherwise be permitted by the Act.

END OF SECTION 00870

SECTION 00880
REGULATORY REQUIREMENTS

1. STANDARDS, CODES AND REGULATION

- 1.1. All Work is to comply with the rules and regulations of governing bodies having jurisdiction.
- 1.2. Standards, codes and regulations published by Manufacturer's associations, governmental agencies and other regulatory authorities form a part of these Specifications as minimum requirements. Such references include the latest issue and legal requirements in force.
- 1.3. Where differences occur between the Contract Documents and such standards, the strictest requirements shall take precedence.
- 1.4. Supply all materials and perform all Work in accordance with the Manufacturer's specifications and installation procedures, and in conformance with published Trade and Manufacturers' association standards, unless specifically noted otherwise in the Contract Documents.

2. PERMITS AND FEES

- 2.1. The Troy School District will obtain and pay for the General Building Permit.
- 2.2. Other than the general building permit, Contractor shall provide and pay for all other permits, assessments, governmental fees, bonds, connection charges, licenses and inspection fees and any other charges necessary for the proper execution and completion of the Contractor's Work.
- 2.3. Contractor is to provide, pay for and coordinate all other permits, fees, inspections, and city, county, state, federal and governing authority approvals required for the successful completion of the Work contained within its respective Bid Category and deliver required certificates of inspection and approvals to CM.
- 2.4. This Project is under but not limited to the jurisdiction of the
 - MICHIGAN DEPARTMENT OF LABOR FOR MECHANICAL AND ELECTRICAL
 - STATE OF MICHIGAN FIRE MARSHAL DIVISION
 - MICHIGAN DEPARTMENT OF PUBLIC AND (COUNTY) DEPARTMENT OF PUBLIC HEALTH
 - Site water and sewer utilities are under the jurisdiction of the COUNTY DRAIN/ROAD COMMISSION authorities

3. TAXES

- 3.1. This Project is subject to all applicable state Sales Tax and/or Use taxes, and Bidder must include such taxes in its Bid Proposal. All other taxes applicable to the project at the time of the bid are to be included in the bid amount and will be the responsibility of Bidder.

END OF SECTION 00880

**SECTION 01140
USE OF PREMISES**

1 RULES AND ENFORCEMENT:

- 1.1. Contractor and its Subordinate Parties shall be subject to rules and regulations for the conduct of the Work as stated herein and as the Owner or CM may establish.
- 1.2. Willful disregard of the following will be grounds for requiring the offending person(s) to be removed from the Project, and may subject the Contractor to termination under the Agreement.

2 USE OF PREMISES AND DELIVERIES

2.1. ACCESS TO WORK:

- 2.1.1. Before starting the Work, Contractor shall ascertain from CM what entrances, routes or roadways shall be used for access to the Work, and use only those designated for movement of personnel, materials and vehicles to and from the Project site.
- 2.1.2. Close coordination is required of Contractor with the Owner, CM, other contractors, the city and others having an interest in the Project to assure that Work on the site, access to and from the site and the general conduct of operations is maintained in a safe and efficient manner, and that disruption and inconvenience to existing streets and property is minimized.
- 2.1.3. Contractor is responsible to review the site and be familiar with all existing conditions within and around the Owner's property including local conditions and requirements.

2.2. ENTRANCES AND DRIVES

- 2.2.1. Specific entrances for material deliveries, equipment deliveries and worker access to the Project site will be as designated/directed by CM.
- 2.2.2. Selected entrances to the Project site will remain open for use during normal working hours.
- 2.2.3. At no time are vehicles to be parked, whether attended or not, in the Owner's entrances or drives.
- 2.2.4. Any material delivery which will tie up the Owner's entrances or drives shall be pre-scheduled with the Owner through CM.
- 2.2.5. Owner's deliveries and operations will take precedence over scheduling of construction deliveries.

2.3. ACCESS TO BUILDINGS:

- 2.3.1. Maintain free access to all buildings and areas of the site for designated vehicles, service vehicles and fire fighting equipment, and at no time shall block off or close roadways or fire lanes without providing auxiliary roadways and means of entrance acceptable to the Owner and CM.
- 2.3.2. Maintain a clean and safe passageway for the Owner's operations and personnel in existing areas, and maintain clearances adjacent to and in connection with the Work performed. Fire hydrants must remain accessible at all times.
- 2.3.3. Give the Owner and the local fire department at least forty-eight (48) hours notice of any such changes of routes.

2.4. SITE PARKING:

- 2.4.1. There is on-site parking for Contractors and their Subordinate Parties' employees.
- 2.4.2. Contractor, Subordinate Parties and their personnel will be allowed to park in the Owner's parking area. Each Contractor is responsible for providing transportation to and from the site, if required.

- 2.5. **LOADING OF STRUCTURE:** Each Contractor on behalf of itself and its Subordinate Parties shall not load or permit any part of a structure to be loaded with a weight that will endanger its safety.
- 2.6. **USE OF OWNER'S EQUIPMENT:** Contractors and their Subordinate Parties will not be allowed to use any Owner tools or equipment during the course of the Project .
- 2.7. **USE OF EXISTING ELEVATORS**
 - 2.7.1. Contractor may subject to the approval of CM and Owner, use the existing elevator(s) designated by the Owner within the contract boundaries for movement of personnel and materials to a construction area.
 - 2.7.2. In those cases where an elevator is to be shared with Owner services, the Owner's employees and services take priority over construction activities.
 - 2.7.3. Contractor is responsible for proper conduct with regard to the use of the elevator. Any damage to the elevator due to oversize load, excess weight or other conditions is the individual Contractor's responsibility.
 - 2.7.4. Use of the elevator(s) at times other than normal working hours shall be coordinated with CM and Owner.
- 2.8. **USE OF EXISTING FACILITIES**
 - 2.8.1. Limit the usage of the occupied areas of the facility to that which is absolutely necessary for the installation of the Work. Parts of the facility not in the construction area are "off limits" unless a specific work task is being performed as designated by CM.
 - 2.8.2. Use of the Owner's cafeteria, parking, telephones, toilet facilities, tools, equipment, or any other item or facility belonging to the Owner is not allowed unless specifically authorized by Owner and CM.
 - 2.8.3. Restrict all Work activities associated within an area undergoing renovation to the boundaries indicated by the Contract Documents. Any means of access or egress from the stipulated boundaries shall be coordinated with CM and the Owner.
- 3 **WORK HOURS:**
 - 3.1. Normal working hours are; 7:00 AM to 3:30 PM, Monday through Friday.
 - 3.2. Work operations shall comply with all applicable laws, ordinances, and regulations, and not create a public nuisance nor disturb the peace.
 - 3.3. Compensation to CM for supervisory staff due to abnormal working hours will be at the requesting Contractor's expense.
 - 3.4. Whenever Contractor intends to depart from normal work hours, it shall notify CM in writing at least forty-eight (48) hours in advance. Failure of Contractor to give such timely notice may result in CM directing the removal or uncovering of the Work performed during such abnormal hours at Contractor's expense. Special arrangements can be made for emergency work or shutdowns as may be required.
 - 3.5. Required off-hours work:
 - 3.5.1. Contractors may be requested to work split shifts, weekends, off peak Owner loading periods, etc., to accommodate Owner's utility and service requirements, such as, but not limited to, medical gas systems, electrical power, HVAC systems, storm and sanitary lines.
 - 3.5.2. All Work shall be bid on a straight time basis. Should premium time be required by the Owner, the cost for premium time labor, which may be required, is the Contractor's responsibility and is to be included in the base bid.
- 4 **USE OF EXPLOSIVES:** Is NOT permitted.
- 5 **DUST, DIRT, NOISE:** Each Contractor shall effectively confine or eliminate dust, dirt and noise to the actual construction area and in compliance with all applicable laws, rules and regulations.

6 **BEHAVIOR AND CONDUCT:** The Owner and CM expect Contractors and their Subordinate Parties to exercise common sense and good judgment, and to conduct themselves in a manner which would be a credit to the Owner. Without limiting other applicable provisions of the Contract Documents, Contractor shall not engage in the following:

- 6.1. Conduct that interferes with Work or work of others.
- 6.2. Conduct that interferes with or is detrimental to safety, well-being of the owner, their operations and/or good reputation.
- 6.3. Unauthorized use of confidential information.
- 6.4. Discourtesy toward Owner's staff, visitors and the general public (including abusive, vulgar or other language.)
- 6.5. Soliciting, canvassing, posting, or distributing literature or materials for any purpose while on the job site.
- 6.6. Disregard of safety, sanitation, or security laws, rules and regulations.
- 6.7. Stealing.
- 6.8. Gambling.
- 6.9. Possession and/or use of narcotics or intoxicants.
- 6.10. Threats or abuse of others.
- 6.11. Disorderly conduct or fighting.
- 6.12. Playing of loud music.
- 6.13. Falsification of information.
- 6.14. Unauthorized travel of Contractor's employees outside the designated project Work areas.
- 6.15. Discriminating behavior.
- 6.16. Possession and/or use of weapons or firearms.
- 6.17. Sexual or Ethnic harassment.
- 6.18. Smoking: Contractors and their Subordinate Parties shall be responsible for adhering to the smoking policies and regulations of the Owner and the Owner's facilities.

7 **TEMPORARY PARTITIONS:**

- 7.1. Partition construction shall provide a fire-resistant classification approved by the authorities having jurisdiction. Openings in such partitions shall be protected by fire doors consistent with the rating of the partition. Any trade creating penetrations through the temporary partitions shall fire stop openings to match the rating of the wall.

8 **PROTECTION OF FACILITIES**

- 8.1. Each Contractor on behalf of itself and its Subordinate Parties shall be responsible for all damage to the Project including the existing buildings and grounds arising or resulting from its operations under the Agreement. Repair or replacement of damaged items shall be to the satisfaction of the Owner and CM.
- 8.2. Each Contractor shall provide and maintain proper shoring and bracing for existing underground and aboveground utilities, foundations, structure and systems encountered during its Work and shall
 - 8.2.1. protect the project, or any part thereof, and surrounding areas from collapse or movement, or any other type of damage until such time as they are to be removed, incorporated into the new Work or can be properly supported or backfilled upon completion of new Work.
 - 8.2.2. limit disruptions to a maximum of four (4) hours.

- 8.2.3. prior to beginning any Work that may affect underground facilities, contact MISS DIG and utility companies for the location of all existing underground services.
 - 8.2.3.1. Provide, documentation of such contact to CM.
 - 8.2.3.2. If necessary, Contractor shall pay for layout and locating of existing utilities.
 - 8.3. Utilities and/or other services which are shown, or not shown but encountered, shall be protected by the Contractor from any damage arising or resulting from Work, unless or until they are abandoned. If the utilities or services are damaged from Contractor's Work, Contractor shall immediately repair any damage and restore the utilities and services to an equal or better condition than that which existed prior to the damage. Contractor will be responsible for all liabilities, expenses, lawsuits or claims arising or resulting from such damage and will defend, hold harmless and indemnify Owner and CM from any claims or lawsuits or other expenses.
 - 8.4. Each Contractor on behalf of itself and its Subordinate Parties shall be responsible for all damage to the Project and surrounding areas including the existing building and grounds arising out of or resulting from their performance of the Work. Repair or replacement of damaged items shall be to the satisfaction of the Owner and CM.
 - 8.5. Preservation of existing trees and other vegetation on the site to the maximum extent possible is required.
 - 8.5.1. Each Contractor must plan its Work and instruct its Subordinate Parties to conduct their operations to avoid damage to trees and vegetation (provide barriers as required.)
 - 8.5.2. Indiscriminate driving about the site, disposing of waste, storage of materials upon or against trees or any other activity which is harmful to trees or vegetation will not be tolerated.
 - 8.5.3. Any case of damage to any tree shall be reported to CM immediately so that professional repairs can be made. The cost of such required repairs or treatment shall be charged to the responsible Contractor.
- 9 OWNER'S OPERATIONS & INTERRUPTION OF OCCUPANCY /SEQUENCING
- 9.1. The Owner shall have the option to curtail or delay any activity that affects its operations. Should a Contractor be asked to stop its Work, the Contractor shall do so immediately and proceed with other activities with no additional cost to the Owner or CM.
 - 9.2. The Owner may occupy the premises during the entire period of construction to conduct operations.
 - 9.3. Each Contractor is responsible to plan, coordinate and execute its Work in such a manner that there will be no disruption of or the least disruption to the Owner's operations. If an interruption of operations is unavoidable, then this Work will be scheduled with the Owner through CM.
 - 9.4. Contractors is responsible to provide temporary utilities and systems to maintain services to the facility while Work is being performed.
 - 9.5. No interruptions to Owner's power, lighting, signal, or alarm circuits will be permitted without the express written permission of the Owner through CM. Arrangements for interruptions shall be made with the Owner at least forty-eight (48) hours prior to the interruption and shall be made at such time and duration as authorized by them. Temporary feeders, transformer jumpers, connections, circuits, etc., shall be used as required to accomplish the above at no additional cost to the Owner and CM.
- 10 MATERIAL STORAGE
- 10.1. All Contractors are required to provide and pay for off-site storage facilities as required for their Work.
 - 10.2. All Contractors will not be allowed on-site storage facilities. Material, equipment and tools, shall not be stored on-site in excess of five (5) working days prior to installation or use without CM's approval.
 - 10.3. Storage of combustible materials within or adjacent to the building is prohibited.
 - 10.4. All Contractors shall

- 10.4.1. Stock the job with sufficient materials to maintain progress and schedule and without interfering with the Work or storage of others.
- 10.4.2. Assume full responsibility for the protection and safekeeping of products under their control which are stored on the site.
- 10.4.3. Move any stored products under their control, which interfere with operations of the Owner or separate contractors as directed by CM.
- 10.4.4. Provide sufficient protection for its materials and equipment from damages by weather or construction work or other hazards.
- 10.4.5. Remove all debris and leave the area in a clean and orderly condition during progress of Work and upon completion of the Work.
- 10.4.6. Submit a receipt of shipment for all equipment stored on-site or off-site to CM. No materials or equipment shall be removed from the site without the permission of CM

END OF SECTION 01140

SECTION 01250 CHANGES IN THE WORK

1 SUMMARY

1.01 This section describes the following requirements including:

1.01.1 Types of Change Documentation

1.01.1.1 PCO – Potential Change Order

1.01.1.2 CO – Change Order

1.01.2 Compensation of Overhead and Profit for Changes in the Work

1.01.3 Itemization of Cost of Changed Work

1.02 This section is not intended to include RFI's, ASI's (Architects Supplemental Instructions), or other documents that clarify the work but have no substantive cost or schedule impact to the work.

2 TYPES OF CHANGE DOCUMENTATION

Changes to the work which may involve a change in the contract price or schedule will be accompanied by the Barton Malow form entitled "PCO- Quotation Only". In the event that the timing does not allow the For Quote Only process, then CM will issue its form entitled "PCO-Notice to Proceed."

2.1. PCO- NOTICE TO PROCEED AND FOR PCO- QUOTATION ONLY FORMS

- 2.1.1. A PCO- Notice to Proceed is used when Work must be performed with swiftness and authorization to proceed by Change Order is inappropriate due to time restrictions. In order for a PCO- Notice to Proceed to be valid, it must be signed by CM. The terms for establishing the additional cost and processing of the PCO- Notice to Proceed into a Change Order shall be identified prior to its release by CM.
- 2.1.2. If a change results in a change in cost, CM will issue a PCO with the supporting change documents.
- 2.1.3. Contractor shall prepare a detailed cost quotation for the PCO. This quotation shall include an itemized takeoff of labor, equipment and material with a unit cost for each item together with backup and breakdown documentations satisfactory to CM. The PCO must be returned as directed
- 2.1.4. Contractor shall sign and date the PCO and submit it with proper backup. The PCO will then be reviewed, evaluated, negotiated and then, when acceptable, processed
- 2.1.5. The PCO- Quotation Only is a document used for processing Contractor's quotations and is **not** a Change Order. Therefore, completion of the PCO- Quotation Only does **not** release the Work to begin.
- 2.1.6. PCO's will precede a Change Order. Contractors shall receive an approved PCO- Notice to Proceed or an executed Change Order before starting Work. Any changed Work performed by Contractor without a properly executed PCO- Notice to Proceed or a properly executed Change Order is at Contractor's sole risk and expense. **BILLINGS AGAINST CHANGES WILL NOT BE ACCEPTED AFTER A PCO- NOTICE TO PROCEED OR FOR QUOTE ONLY IS ISSUED, BUT ONLY AFTER A CHANGE ORDER HAS BEEN PROCESSED AND SIGNED BY ALL PARTIES.**

2.2. CHANGE ORDER

- 2.2.1. Change Orders will be issued by CM. CM will first issue the Change Order to the Contractor for signature. The Change Order will then be returned to CM. Once all appropriate signatures are secured, an executed copy will be sent to the Contractor.
- 2.2.2. Once the Change Order has been processed and signed by all parties, the Contractor may invoice for payment on the completed portion of Work.
- 2.2.3. Agreement on a Change Order shall constitute a final settlement of all matters relating to the changed Work that is the subject of the Change Order.

3. COMPENSATION OF OVERHEAD AND PROFIT FOR CHANGES IN THE WORK

3.1. CONTRACTOR'S OVERHEAD AND PROFIT

- 3.1.1. For changes resulting in increase of cost:
 - 3.1.1.1. Overhead and profit for the Contractor shall not exceed the following when change Work is performed by
 - 3.1.1.1.1. Contractor itself: fifteen percent (15%).
 - 3.1.1.1.2. Contractor subordinate party: five percent (5%)
 - 3.1.1.2. Overhead and profit for the subordinate party shall not exceed the following when change Work is performed by
 - 3.1.1.2.1. Subordinate party itself: fifteen percent (15%)
 - 3.1.1.2.2. Contractor to the subordinate party: five percent (5%)
- 3.1.2. For changes resulting in reduction of cost
 - 3.1.2.1. Deductive costs shall include commensurate deductive credits for overhead and profit based on the percentages stated above.
- 3.1.3. Contractor's and Subordinate Party's overhead and profit shall include cost (at the Project Site, home office and otherwise) of supervision, telephone, travel, copying, administrative services, office, power, light, tools, jobsite vehicles, and all other general expenses including bond premiums. In no event shall these items be charged as cost of the Changed Work.

4. ITEMIZATION OF COST OF CHANGED WORK

4.1. EXTRA WORK TICKETS

- 4.1.1. If extra work is to be completed above and beyond the terms of the contract, as determined by (and approved in advance by) the CM, the Contractor is required to:
 - 4.1.1.1. Provide an Extra Work Order ticket to the CM within three (3) days of completing the work.
 - 4.1.1.1.1. Extra Work Order tickets will be rejected if they are not turned in to the CM within three (3) days of completing the work.
 - 4.1.1.1.2. Extra Work Order tickets are to be completed in triplicate and a copy is to be left with the CM.
 - 4.1.1.1.2.1. The CM will sign all copies of the Extra Work Order tickets and return two (2) to the Contractor in a prompt manner, keeping one for record.
 - 4.1.1.1.3. A copy of the signed ticket(s) must accompany the Request for Change Order(s) quote from the Contractor. A change order will not be processed and the Request for Change Order(s) will be rejected if there is no signature from the CM.

4.1.1.2. Provide the CM with a Request for Change Order for the extra work within ten (10) days of receiving the signed ticket.

4.1.1.2.1. The Request for Change Order must be accompanied by a copy of the signed Extra Work Order ticket from the Contractor.

4.1.1.2.2. The Request for Change Order will be rejected and no PCO or Change Order will not be processed if the quote is not received within ten (10) days of the date signed by the CM.

4.2. CORRELATION WITH CONTRACTOR'S SUBMITTALS

4.2.1. Contractors shall

4.2.1.1. Revise the Schedule of Values and Request for Payment forms to record each Change Order as a separate item of Work, and to record the adjusted contract price.

4.2.1.2. Revise the Construction Schedule to reflect each change in Contract Time approved by a Change Order.

4.2.1.3. Revise sub-schedules to show changes for other items of Work affected by the changes.

4.2.1.4. Enter and revise Record Documents to reflect changes

4.3. COST OF THE CHANGED WORK

4.3.1. The "Cost of the Changed Work" shall be approved by CM and shall mean the costs necessarily incurred by the Contractor in the proper performance of the Changed Work. Such rates shall not be higher than those customarily paid at the place of the Project. The Cost of the Changed Work shall only include those items set forth below.

WAGES OF LABOR	Wages of construction workers directly employed by Contractor to perform the construction of the changed Work at the site
PAYROLL MARKUP	The amount approved by CM and Owner which covers the costs paid by the Contractor for taxes, insurance, contributions, assessments, and benefits required by law or collective bargaining agreements and for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holidays vacations and pensions, provided that such costs are based on the wages and salaries of labor performing the changed Work.
COST OF EQUIPMENT, MATERIALS, AND SUPPLIES	Costs of materials, equipment and supplies to be incorporated into the changed Work less all savings, discounts, rebates and credits accruing to the Contractor.
RENTAL CHARGES FOR EQUIPMENT NOT OWNED BY CONTRACTOR	Rental charges for equipment not owned by Contractor that is necessary for completion of the Changed Work. Rates and quantities rented must be approved in advance by CM.
TAXES	Sales or use taxes imposed by a governmental authority which are directly attributable to the changed Work and for which the Contractor is liable.
SUBORDINATE PARTY COSTS	Payments made to the Contractors for proper execution of Changed Work, subject to the limits set forth above for overhead and profit.

4.2.2. In no event shall the Cost of Changed Work include:

- 4.2.2.1. Salaries or wages of persons other than those directly performing the changed Work, including Contractor's personnel stationed at the principal office;
- 4.2.2.2. Expenses of the Contractor's principal office and offices other than the site office, except as provided above;
- 4.2.2.3. Overhead and general expenses of any nature, except as set forth above;
- 4.2.2.4. Capital expenses of Contractor, including interest on the Contractor's capital employed for the Changed Work;
- 4.2.2.5. Rental costs for machinery or equipment, except as allowed above, or tools of any kind, unless specifically identified and approved in advance in writing by CM;
- 4.2.2.6. Costs due to the negligence or failure to perform of the Contractor or its Subordinate Parties;
- 4.2.2.7. Costs designated above as being included in Overhead and Profit
- 4.2.2.8. Any cost not specifically described above, or otherwise approved in advance and in writing by CM and Owner.
- 4.2.2.9.** Any bond premiums of portion of increased bond costs directly attributable to the changed Work.

4.3. QUOTATION FORMAT

Based on the above, the following formula will be utilized by all of the Contractors.

Number of PCO _____	_____
Date of PCO _____	_____
Description of Change _____	_____
_____	_____
_____	_____
_____	_____

Cost of Changed Work

Labor:

Carpenter	(No. of Hrs. x Rate)	xxx.xx	
Labor	(No. of Hrs. x Rate)	xxx.xx	
Ironworker	(No. of Hrs. x Rate)	<u>xxx.xx</u>	
	Subtotal		xxx.xx
	OH&P @ 15%		xxx.xx

Equipment, Materials, Supplies:

Ace Hardware	xxx.xx		
Acme Products	xxx.xx		
Concrete Supplier		<u>xxx.xx</u>	
		xxx.xx	
	Subtotal		xxx.xx
	OH&P @ 15 %		<u>xxx.xx</u>
	Subtotal (1)		xxx.xx

Contractor Costs

ABC Welding	xxx.xx		
XYZ Resteel		<u>xxx.xx</u>	
	Subtotal		xxx.xx
	OH&P @ 5 %		<u>xxx.xx</u>
	Subtotal (2)		xxx.xx

TOTAL QUOTATION AMOUNT

Total Quotation (Subtotal 1 plus Subtotal 2)

XXX.XX

END OF SECTION 01250

SECTION 01290 PAYMENT PROCEDURES

1. SUMMARY

1.1. This Section describes the following requirements including:

- 1.1.1. Schedule of Values
- 1.1.2. Application for Payment Process
- 1.1.3. Reduction of Retention
- 1.1.4. Payment for Materials Stored Off-site
- 1.1.5. Waivers of Lien and Sworn Statements

2. PAYMENT PROCEDURES

2.1. SCHEDULE OF VALUES

- 2.1.1. Once the Agreement is awarded, each Contractor must submit a Schedule of Values for its entire Work to CM for approval. This Schedule of Values must be submitted either within fifteen (15) days of award or fifteen (15) days prior to the first payment application deadline (per the Application for Payment Schedule), whichever comes first. The Schedule of Values must include labor and material line items for each portion of the Work (larger portions of Work such as concrete, curtainwall, drywall, mechanical, and electrical shall be broken down by elevation, floor, and areas appropriate), the Contractor shall separate bond costs, and general conditions line items as appropriate.
- 2.1.2. The Schedule of Values will be submitted in a format as prescribed by, and to the level of detail specified by, CM.
 - 2.1.2.1. The sum of the parts of the Schedule of Values shall equal the contract price.
 - 2.1.2.2. The minimum level of breakdown and order on the application for payment will be:
 - 2.1.2.2.1. Bond costs, if applicable
 - 2.1.2.2.2. General conditions line item(s)
 - 2.1.2.2.3. Division 1 cost breakdown as required
 - 2.1.2.2.4. Costs associated with preparation of closeout paperwork and documentation
 - 2.1.2.2.5. Major portions of the Work shall be broken down into labor and material line items for specific areas of the facility
 - 2.1.2.2.6. A listing of approved and executed Change Orders to the Contract, if any, in sequential order.
 - 2.1.2.3. Schedule of Values items shall have a direct and understandable relation to the Project master construction schedule.
 - 2.1.2.4. Overhead and profit shall be listed as a separate line item on the schedule of values.
- 2.1.3. The Schedule of Values, unless objected to by CM, Owner or Architect, shall be the basis for the Contractor's application for payments.
- 2.1.4. CM shall have the right to require the Contractor to alter the value or add/delete categories listed on the Schedule of Values at any time for the following reasons:
 - 2.1.4.1. The Schedule of Values appears to be incorrect or unbalanced.

- 2.1.4.2. A revision of the Schedule of Values is required due to the Contractor revising the sequence of construction or assembly of building components that in turn invalidates the Schedule of Values.
- 2.1.4.3. Change Orders are issued to the Contractor and shall be incorporated into the Schedule of Values as a separate line item at the bottom of the Schedule of Values.
- 2.1.5. The Contractor is required to correlate the documentation for payment of stored materials requested in the application for payment against the agreed upon breakdown of the Schedule of Values as described in Payment for Stored Materials. CM reserves the right to not process the application for payment if this correlation has not been submitted in conjunction with the application.

2.2. APPLICATION FOR PAYMENT PROCESS

2.2.1. Step 1: JOB-SITE INSPECTION - DRAFT PAYMENT REQUEST

2.2.1.1. The Contractor shall

- 2.2.1.1.1. have a representative walk the Project site with CM's representative on or before the tenth (10th) of the month,
- 2.2.1.1.2. invoice for Work from the tenth (10th) of last month to the tenth (10th) of the present month.
- 2.2.1.1.3. submit during the review, the itemized rough draft of the Application and Certificate for Payment (AIA Documents G702 and G703 Continuation Sheet) identifying the Work completed, if any, during the current calendar month; shall review same with CM and obtain a preliminary approved copy of the draft for official submission
- 2.2.1.1.4. Contractor's pay application shall only reflect Work completed through the date of submission. In no event will payments be authorized for forecasted Work.

NOTE: No payment shall be issued to a Contractor for materials stored off-site unless supported by proper documentation as required by CM (upon advance notification of such requests only) as described in Part 3 Payment for Stored Materials.

2.2.2. Step 2: PAYMENT REQUEST PREPARATION/SUBMISSION

- 2.2.2.1. With the information agreed upon in Step 1, the Contractor will prepare a formal application for payment request.
- 2.2.2.2. Three (3) originals of the request and three (3) originals of the sworn statements must be submitted to CM's Site office on or before the fifteenth (15th) of the month.
- 2.2.2.3. Late or incomplete application packets will not be accepted.**
- 2.2.2.4. The payment request will be made on an Application and Certificate for Payment form (AIA documents G702 and G703).
- 2.2.2.5. Before submitting these documents to CM, each request for payment must be signed by a duly authorized agent of the Contractor and notarized.
- 2.2.2.6. The Contractor must include with each request for progress payment a waiver of lien for all previous payments, Contractor's sworn statement and any necessary backup data as described in Part 4, Waivers of Lien and Sworn Statements.
- 2.2.2.7. In addition, at submission of the final pay application Contractor shall provide unconditional final waivers of lien for all Subordinate Parties, as well as all close out documentation and all additional back up data described in Part 4, Waivers of Lien and Sworn Statements.

- 2.2.2.8. In requests for payment which follow the execution of a Change Order in excess of twenty-five percent (25%) of the Agreement price, Contractor must present a bond rider evidencing that the penal sum of any required payment and performance bonds have been increased to one hundred percent (100%) of the adjusted Agreement price, or such other percentage as set forth in Section 00200 of the Project Manual, Instructions to Bidders. Submission of the required back-up data is a condition precedent to payment.

2.2.3. Step 3: CHECK DISTRIBUTION

- 2.2.3.1. CM will issue individual checks to each Contractor. The Contractor will receive the waiver of lien with the check and will be required to sign three (3) originals of the waiver upon receipt of the check each month (see Part 4).
- 2.2.3.2. The Contractor shall provide all supporting documentation substantiating the Contractor's right to payment as the Owner, CM and the Architect may require.

2.3. REDUCTION OF RETENTION

- 2.3.1. CM shall be entitled to withhold ten (10%) percent of each payment due to a Contractor until Substantial Completion of the Contractor's Work.
- 2.3.2. The Contractor, when requesting a reduction of retention, shall submit to CM, an AIA G707, Consent of Surety to Reduction In or Partial Release of Retention form in Section 01600 Forms.
- 2.3.3. Within thirty (30) days after Certificate of Substantial Completion has been issued for all portions of its Work, the Contractor's retention may be reduced to a sum as CM/the Architect may determine is suitable to protect CM and the Owner for all incomplete Work and any unsettled claims.
- 2.3.4. Notwithstanding the foregoing, payment of retention shall be subject to all other conditions precedent that applies to payment as set forth in the Contract Documents.

3. PAYMENT FOR MATERIALS STORED OFF-SITE

3.1. PAYMENT FOR MATERIALS STORED OFF-SITE

- 3.1.1. The Contractor, if intending to use an off-site storage area or facility for stored materials, shall submit a written request to the CM and obtain approval prior to submitting the first application for payment as described in Part 2 Applications for Payment.
- 3.1.2. Payments will be made for materials properly stored off site.
 - 3.1.2.1. "Properly stored" shall mean in an insured warehouse with the Owner and CM being named as insureds, and all material identified as property of the Owner.
 - 3.1.2.2. The Contractor is responsible for all associated off site storage costs, transportation, insurance, including insurance coverage for stored material, while in transit, unless Contractor obtains written documentation that the material is covered during transit under a Builder's Risk Policy applicable to the Project.
 - 3.1.2.3. Contractor shall provide CM and the Owner verification in writing for all material so stored. Such materials shall be protected from diversion, destruction, theft, and damage to the satisfaction of CM, Owner and the Lender (if any), specifically marked for use on the Project, and segregated from other materials at the storage facility.
 - 3.1.2.4. The Contractor bears all risk of loss to materials and equipment stored off site.
- 3.1.3. Contractor is to provide supporting documentation in the form of invoices, insurance policies, and any other pertinent documentation as requested by CM or Owner for items the items stored off-site. Documentation shall include the following:

- 3.1.3.1. Detailed description of the material including quantities that will serve as a material description for the billing and as information to file a claim with an insurance company.
 - 3.1.3.1.1. Stored Materials - Each item must be identified as to manufacturer, model number, and serial number, if applicable, or other identifiers should be listed for each item. Each listing must be accompanied by invoices, shipping tickets, consent of surety, and any other applicable supporting documentation.
 - 3.1.3.1.2. Stored Manufactured Building Materials - Each item must be identified as to type, manufacturer's number or designation, and should also list the number of cartons and the contents therein storage. Each listing must also be accompanied by supporting documents including all invoices, shipping tickets and consent of surety.
 - 3.1.3.1.3. Stored Fabricated Materials - A listing specifying the number of pieces, items, and marks as may be applicable to the particular type of items. Photographs should accompany the request.
- 3.1.3.2. Individual itemized costs of materials and the total cost value, which shall not exceed the Contractor's subcontractor or material supplier cost. The total cost value shall be supported by the Contractor's subcontractor or material supplier invoices for the stored material.
- 3.1.3.3. Estimated cost value for those materials that are fabricated by the Contractor's subcontractor or material supplier.
- 3.1.3.4. The location where the material is physically stored, including the warehouse address and storage location within the warehouse, such as bin number, aisle number or other designation. All material shall be segregated and marked.
- 3.1.3.5. Copies of the insurance policies that cover the stored materials and that name CM and the Owner as insureds. The limit of the insurance policy shall be equal to or greater than the replacement value of the stored materials.
- 3.1.4. When Applications for Payment include products stored off the Project Site or stored on the Project Site but not incorporated in the Project, for which no previous payment has been requested, a complete description of such product shall be attached to the application.
- 3.1.5. Contractor shall submit a certificate of title listing the Owner's ownership in the off-site stored materials equal to the amount paid effective at the time funds are delivered.
- 3.1.6. If the size, quantity, and/or type of material or product is such that a bonded warehouse is deemed unsuitable, then, with CM's approval, the Contractor may elect to prepay its subcontractor or supplier for certain material and products which are to remain on and be stored on that subcontractor/supplier's premises until needed by the Project. In such event, the Contractor shall enter into a security agreement with the subcontractor/supplier under which the Contractor shall be granted a security interest in and to all such material and products fabricated and/or to be supplied by the subcontractor/supplier for this Project and stored on the subcontractor/supplier's premises. This Security Agreement shall be a part of the financing statement, which shall be presented to a filing officer for filing pursuant to the Uniform Commercial Code. All expenses incurred in obtaining this security agreement shall be at Contractor's sole cost and expenses, and shall not accrue to the Owner, CM, Architect, nor the Project. A copy of each and every security agreement shall be filed with CM with the first Application for Payment which requests payment for such material or products.
- 3.1.7. All payment requests for off-site stored materials must be accompanied using the "Payment Request for Stored Materials" and a "Subcontractor Affidavit for Stored Materials." Payment requests for stored materials not complying with the foregoing requirements will not be approved. Contractors are to notify the CM in ample time to conduct verification procedures.

- 3.1.8. Contractors may not apply the cost of materials stored off-site towards a reduction in the retention amount.
- 3.1.9. Representatives of CM and Owner shall have the right to make inspections of the storage areas at any time.

4. WAIVERS OF LIEN AND SWORN STATEMENTS

4.1. WAIVERS OF LIEN

- 4.1.1. The Contractor's first Application for Payment will be based upon 100 percent of the value of Work installed. The first payment, amounting up to 90 percent of application, will be made to the Contractor without supporting documentation. Subsequent Applications for Payment must be accompanied by lien waivers from the Contractor, its Subordinate Parties or receipted invoices covering payment to the Contractor for previous calendar month period. Lien waivers must be unconditional and must show the amount paid.
- 4.1.2. An "Acknowledgment of Payment and Partial Unconditional Release" will be distributed with the check to each Contractor by CM for payment of the previous month's application. The Waiver of Lien is to be signed by an authorized representative of the Contractor. Under no circumstances will payment be released until the completed "Acknowledgment of Payment and Partial Unconditional Release" has been submitted and signed by the Contractor from the previous month.
- 4.1.3. Final payment will not be made until a "Final Release Subcontractor/Materialman has been submitted. This will also be distributed by the CM for Contractor signature and must be returned by the Contractor. The Final Release must be signed by an authorized representative of the Contractor and must be notarized.
- 4.1.4. Final unconditional waivers will be required for all of Contractor's Subordinate Parties listed on Contractor's sworn statement. These final waivers must be submitted along with the final release, before payment can be made.

4.2. SWORN STATEMENTS

- 4.2.1. The appropriate number of original "Sworn Statements" must be completed to the satisfaction of CM, signed and notarized by an authorized representative of the Contractor and submitted with the Contractor's Application for Payment, monthly to the CM.
- 4.2.2. The Contractor's Subcontractor's sworn statements, waivers and other supporting documentation will be required with each pay application.

END OF SECTION 01290

SECTION 01310 MEETINGS

1. GENERAL

1.1. DESCRIPTION OF REQUIREMENTS

- 1.1.1. The CM shall schedule, chair, and administer all periodic meetings throughout the progress of the work for the purpose of coordinating and expediting the Work. Such meetings shall be held at the job site bringing together responsible representatives of active Contractors for the purpose of planning, assessing progress and discussing problems of mutual concern. Each Contractor, and its Subordinate Parties' representative attending the meetings shall be authorized to act on behalf of and make decisions/commitments for the entity each represents, the decisions made at the meetings and each Contractor who should be in attendance will be held responsible for information and directions given at the meeting.
- 1.1.2. The CM will prepare and distribute the minutes of all meetings, if CM determines minutes are required. If the attendees do not object in writing to any part of the meetings within ten (10) days of distribution of the minutes, the minutes shall be accepted as written.
- 1.1.3. The scope of meetings include, but are not limited to:
 - 1.1.3.1. Preconstruction Meeting
 - 1.1.3.2. Job Progress/Coordination Meetings
 - 1.1.3.3. Other Meetings

2. TYPES OF MEETINGS

2.1. PRECONSTRUCTION MEETING (KICK-OFF)

- 2.1.1. A Preconstruction (kick-off) meeting will be conducted with representatives of all the Contractors within fifteen (15) days after the Agreement is awarded at the jobsite or as designated by the CM. The agenda may include:
 - 2.1.1.1. Discussion on major subcontracts and suppliers
 - 2.1.1.2. Major and/or critical work sequencing regarding the project schedule
 - 2.1.1.3. Project coordination and designation of responsible personnel
 - 2.1.1.4. Procedures and processing of field instructions, requests for proposal, submittals, change orders, applications for payment, etc.
 - 2.1.1.5. Quality assurance/control issues
 - 2.1.1.6. Adequacy of distribution of contract documents
 - 2.1.1.7. Procedures for maintaining record documents
 - 2.1.1.8. Use of premises, office, work and storage areas and other CM requirements
 - 2.1.1.9. Construction facilities/temporary utilities
 - 2.1.1.10. Safety and security procedures
 - 2.1.1.11. Other administrative procedures
 - 2.1.1.12. Review of Owner expectations

2.2. JOB PROGRESS/COORDINATION MEETINGS

- 2.2.1. On-site project coordination/progress meetings will be held on a bi-weekly basis or as appropriate throughout the life of the Project. The [CM/Owner] will set the agenda for the Project progress meeting. At a minimum, each Contractor shall be prepared to discuss the following:
 - 2.2.1.1. Actual vs. scheduled progress for the prior two-week period

- 2.2.1.2. Planned construction activities for the next four weeks
- 2.2.1.3. Problems with, revisions to and corrective measures and procedures to regain the construction schedule, if required
- 2.2.1.4. Review of off-site fabrication, delivery schedules
- 2.2.1.5. Document clarification requests
- 2.2.1.6. Coordination items with other Contractors
- 2.2.1.7. Changes in the work affecting cost and/or time
- 2.2.1.8. Submittals and shop drawings
- 2.2.1.9. Field observations, problems, conflicts
- 2.2.1.10. Quality control issues and non-conformance resolutions
- 2.2.1.11. Safety issues

2.3. OTHER MEETINGS

- 2.3.1. QUALITY ASSURANCE MEETINGS - CM may conduct quality assurance/quality control meetings as necessary during the progress of the Work. CM will set the agenda for the quality meeting. At a minimum, the Contractor shall be prepared to discuss the following:
 - 2.3.1.1. Testing and inspection procedures
 - 2.3.1.2. Tolerance requirements
 - 2.3.1.3. Quality samples
 - 2.3.1.4. Reporting of non-conformance items
 - 2.3.1.5. Corrective actions assigned
 - 2.3.1.6. Disposal of non-conforming items
 - 2.3.1.7. Job procedures
- 2.3.2. SAFETY MEETINGS - Refer to Section 00810 Safety and Loss Control Program for more information.
- 2.3.3. INSPECTIONS TOURS - Formal inspections/tours may be made of the Project progress by the Owner, Architect, local, state or federal officials, insurance representatives, or others as the occasion warrants and as scheduled by CM. If requested by CM, each Contractor shall be prepared to show and explain Work throughout the building to the inspecting parties, in addition to providing Work in compliance with these inspections.
- 2.3.4. CHANGE REQUEST MEETINGS - Upon issuance of a major Proposal Request (a.k.a. bulletin), CM may conduct a meeting as necessary with all significant Contractors to review its contents and determine cost, delivery and schedule impacts. At a minimum, the Contractor shall be prepared to discuss the following:
 - 2.3.4.1. Impact of out-of-sequence work
 - 2.3.4.2. Identification of pertinent long-lead material and system impact
 - 2.3.4.3. Alternative recommendations
 - 2.3.4.4. Evaluation of approximate cost magnitude
 - 2.3.4.5. Evaluation of impact on completion
 - 2.3.4.6. Alternate sequencing
 - 2.3.4.7. Due date for Contractor pricing and scheduling impact

END OF SECTION 01310

SECTION 01320 COMMUNICATIONS

1. SUMMARY

1.1. This Section describes the following requirements including:

- 1.1.1. Meetings / Communications
- 1.1.2. Contractor Correspondence
- 1.1.3. Contractor's Daily Report
- 1.1.4. Request for Information (RFI)

2. METHODS OF COMMUNICATION

2.1. MEETINGS (previous Section 01310 – Meetings)

- 2.1.1. The CM shall schedule, chair, and administer all periodic meetings throughout the progress of the work for the purpose of coordinating and expediting the Work. Such meetings shall be held at the job site office bringing together responsible representatives of active Contractors for the purpose of planning, assessing progress and discussing problems of mutual concern. Each Contractor, and its Subordinate Parties' representative attending the meetings shall be authorized to act on behalf of and make decisions/commitments for the entity each represents, the decisions made at the meetings and each Contractor who should be in attendance will be held responsible for information and directions given at the meeting.
- 2.1.2. The CM will prepare and distribute the minutes of all meetings, if CM determines minutes are required. If the attendees do not object in writing to any part of the meetings within ten (10) days of distribution of the minutes, the minutes shall be accepted as written.
- 2.1.3. The scope of meetings include, but are not limited to:
 - 2.1.3.1. Preconstruction Meeting
 - 2.1.3.2. Job Progress/Coordination Meetings
 - 2.1.3.3. Other Meetings
 - 2.1.3.3.1. Quality Assurance
 - 2.1.3.3.2. Safety
 - 2.1.3.3.3. Inspection Tours
 - 2.1.3.3.4. Change Request

2.2. CONTRACTOR CORRESPONDENCE

- 2.2.1. All field and/or construction correspondence and/or communications must be directed through CM,. All correspondence should list the following as appropriate:
 - 2.2.1.1. Project Name: Series 1, Bid Package #6 Additions & Remodeling at Boulan Park Middle School & Larson Middle School
 - 2.2.1.2. CM Job#: 140077
 - 2.2.1.3. Architect Job#: 13170 & 13171
 - 2.2.1.4. Contractor Contact Information
 - 2.2.1.5. Subject: clearly indicate subject matter of correspondence

2.3. CONTRACTOR'S DAILY REPORT

- 2.3.1. Each Contractor will prepare and distribute daily to CM a comprehensive daily report to include pre-task planning and maintain it during the entire project period. The daily report shall be

submitted to CM's superintendent by the end of the day for that day's Work. Each Contractor is responsible for specifically alerting CM to items which could result in claims or delays.

- 2.3.2. Each Contractor may provide its own daily report if it covers the same issues as addressed in CM's Contractor Daily Report / Pre-Task Plan form. The CM suggested report form will be provided to the Contractor and is in Section 01600 - Forms.

2.4. REQUEST FOR INFORMATION (RFI)

- 2.4.1. The Request for Information (RFI) is in Section 01600 Forms.
- 2.4.2. In the event that a clarification is required due to a question raised by the Contractor pertaining to the Contract Documents, the Contractor shall submit a Request for Information (RFI) to the CM, which will be forwarded to the Architect. The RFI should be sufficiently detailed to accurately describe the problem and provide a possible solution.
- 2.4.3. The Architect will return the RFI to CM as expeditiously as possible with its reply. In some instances, the Architect may issue its reply to the RFI on other documents, in which case, the RFI will simply reference these documents.
- 2.4.4. The RFI will be returned to the Contractor by CM. The Contractor is responsible to give proper notice as set forth in the Contract Documents if a response will cause the Contractor to incur additional expense or expend additional time which could impact the schedule. If extra work or an additional cost may exist due to the clarification, CM may issue a PCO- Quotation Only or PCO-Notice to Proceed to the Contractor.

END OF SECTION 01320

SECTION 01330 SUBMITTALS

1 SUMMARY

1.1. This Section describes the following requirements including:

- 1.1.1. Scope
- 1.1.2. Submittal Register
- 1.1.3. Submittal Requirements
- 1.1.4. Submittal Process and Responsibilities
- 1.1.5. Re-submission Requirements

2 SCOPE

- 2.01 Where requirements of this Section vary from the requirements of the General Conditions, this Section's requirements shall take precedence.
- 2.02 CM will prepare and submit a submittal register/schedule including close-out documentation for Contractor's use in preparing submittals required for the Project. Contractor's shall complete the submittal schedule/register showing the dates for submission, lead times required and their expected delivery dates to maintain and follow the construction schedule. Dates for submission noted by Contractor must assume re-submittals will be required. Submittals received on the date scheduled will be processed as specified. CM/Owner/Architect will not be held responsible for delays due to receiving submittals after the date indicated in the Contractor's submittal schedule.
- 2.03 Submittals shall be submitted based on each technical specification section. Submittals containing information about more than one specification section will be returned for re-submittal.
- 2.04 Contractor is responsible to provide all submittals required under the Contract Documents, whether or not listed in the submittal register.
- 2.05 Furnish approved copies of shop drawings, diagrams, templates, catalog cuts, technical data, etc. to others for the purposes of coordination of this Work.
- 2.06 Coordination: Each Contractor shall coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 2.06.1 The Contractor, by providing the submittal assures the product or system submitted is available and deliverable in accordance with the schedule requirements.
 - 2.06.2 Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - 2.06.3 Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - 2.06.4 CM reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 - 2.06.5 Coordinate each submittal as required with all trades and with all public agencies involved.
 - 2.06.6 Secure all necessary approvals from public agencies and others; signify by stamp or other means that all required approvals have been obtained.
 - 2.06.7 Material Compliance Certificate:
 - 2.06.7.1 The following forms are available upon request from the CM:
 - 2.06.7.1.1 Material Compliance Certificate
 - 2.06.7.1.2 Approved Submittal List for Material Compliance Certificate Use

- 2.06.7.2 Contractors may choose to complete the *Material Compliance Certificate* form which will serve as the Contractor's official submittal document and must meet all general submittal requirements. Only approved submittals listed on the *Approved Submittal List for Material Compliance Certificate Use*, prepared by CM, will be reviewed in this format.
- 2.06.7.3 Items available to utilize the Material Compliance Certificate can include a submittal that establishes a level of quality by complying with the manufacturer and manufacturer's designated identifier as called for in the Contract Documents. The Contractor is committed to using this exact specified component. This Certificate is contractually binding.
- 2.06.7.4 This form can be used for multiple submittal items. The Architect/Engineer will review and approve the Material Compliance Certificate in the same manner as a standard submittal.
- 2.06.7.5 In the event additional information would be required after submission and/or approval of the Material Compliance Certificate, the Contractor must provide this information promptly through the standard revision process.

3. SUBMITTAL REQUIREMENTS

3.1. GENERAL

- 3.1.1. Each submittal shall show Contractor's review stamp, with handwritten signature, certifying review of the submittal, verification of field measurements and compliance with the Contract Documents.
- 3.1.2. Each submittal shall be accompanied with a Submittal Transmittal Form. The following information shall be furnished by the Contractor on the submittal transmittal form:
 - 3.1.2.1. Original Date of submission and Revision Date(s).
 - 3.1.2.2. Project name and Architect's and the CM's project number
 - 3.1.2.3. Names of:
 - 3.1.2.3.1. Contractor
 - 3.1.2.3.2. Second-Tier Contractor (if applicable)
 - 3.1.2.3.3. Supplier
 - 3.1.2.3.4. Manufacturer
 - 3.1.2.4. Identification of product or material
 - 3.1.2.5. Technical Section number, clearly identified. On multiple submittals, a separate transmittal should be completed for each specification section on items being submitted.
 - 3.1.2.6. Reference to construction drawings by drawing number
 - 3.1.2.7. The quantity of each Shop Drawing, Product Data or Sample submitted
 - 3.1.2.8. Notification of deviations from Contract Documents
 - 3.1.2.9. For Shop Drawings, show relationship to adjacent structure or materials
 - 3.1.2.10. For Shop Drawings, show field dimensions, clearly stated as such.
 - 3.1.2.11. Applicable standards such as ASTM or Federal Specifications.
 - 3.1.2.12. Other pertinent data
 - 3.1.2.13. Submittals not so transmitted will be returned un-reviewed. Re-submissions shall be so noted on the transmittal.

3.1.3. Unless noted otherwise on the submittal, all submissions will be considered to be "as specified."

3.2. REQUIRED QUANTITIES OF SUBMITTALS (ELECTRONIC REVIEW VERSION)

3.3.1. In general, all submittals, except color or physical samples, are to be posted electronically in PDF document form for CM and the Architect/Engineer to be electronically reviewed and approved. CM will use Prolog Web as a posting site for the facilitation of this review and approval process. The following number of originals and copies will be required for each type of submittal.

Submittal Type:	Required submit quantities:		
	Paper	Electronic ¹)FTP upload(Other
.1 Shop Drawings – Structural Steel and all MEP	3	1 ²	
.2 Shop Drawings – all other	2	1	
.3 Product Data – Structural Steel and all MEP	3	1	
.4 Product Data – all other	2	1	
.5 Samples			4 ³
.6 Certificates ⁴	1	1	
.7 Warranties / Guarantees ⁴	3	1	
.8 Test Reports ⁴	3	1	
.9 Close-Out Materials : ⁴ O&M Manuals and all Data	3	1	
NOTES : ¹ ALL electronic submittals shall be in PDF format ² Provide on compact disk as well as upload to the FTP site (INSERT IF NECESSARY) ³ Unless amount specified within the technical specifications is greater ⁴ Items #6-9 above are to be submitted together as part of the Close-Out Packet when requested by CM			

3.3.2. All submittals will be reviewed electronically via Submittal Exchange, an electronic submittal transmittal is required. Reviewed versions will be posted back to Submittal Exchange. CM will notify Contractor of the posting and availability for Contractor to download the reviewed version. Paper copies will not be returned to the Contractor.

4. TYPES OF SUBMITTALS

4.1. SHOP DRAWINGS

- 4.1.1. Provide Shop Drawings as complete submittals (no partial sets) on original drawings or information prepared solely by the fabricator or supplier. In no instance shall the Contract Drawings be reproduced for Shop Drawing submittals.
- 4.1.2. Sheet sizes shall not exceed the size of the Contract Drawings or smaller than 8-1/2" X 11".
- 4.1.3. Each drawing shall have blank spaces large enough to accept three (3) 3" x 6" review stamps of the Contractor, the CM, and the Architect.

4.2. PRODUCT DATA

- 4.2.1. Modify Product Data sheets to delete information that is not applicable to the Project. Provide additional information if necessary to supplement standard information.
- 4.2.2. Product Data Sheets that are submitted with extraneous information not deleted and/or modified will be returned without review to the Contractor for re-submittal.

4.3. SAMPLES

- 4.3.1. Provide physical Samples to illustrate materials, equipment or workmanship, and to establish standards by which completed work may be judged as required by the technical section.
- 4.3.2. Provide Office Samples in sufficient size or as defined in the technical specifications and quantity to clearly illustrate full range of colors, textures, etc. available and the functional characteristics of the product or material.
- 4.3.3. Erect Field Samples or mock-ups as required by the technical sections and/or CM, at the Project site in a location designated by CM. Construct field samples complete, including Work of all trades required in finishing the Work. Provide Field Samples at the request of the Architect and/or CM where construction materials and/or methods deviate from the requirements of the intent of the Contract Documents or conventional construction practice.
- 4.4. CERTIFICATIONS
 - 4.4.1. Certifications shall clearly identify the materials in reference and shall state that the material and the intended installation methods, where applicable, are in compliance with the Contract Documents for this project. Attach manufacturer's affidavits where applicable.
- 4.5. WARRANTIES/GUARANTEES
 - 4.5.1. Provide warranties and/or guarantees as required by the various technical sections and other Contract Documents on the Contractor's letterhead in accordance with the requirements of the documents.
 - 4.5.2. Refer to Section 01700 for additional close-out information and requirements including the standard CM Contractor's Guarantee Form that must be signed, without modification, in order to receive final payment. A copy of this form is either found in Section 01600 or is available upon request.
- 4.6. OPERATING AND MAINTENANCE MANUALS
 - 4.6.1. Provide operating and maintenance manuals/data as required by the various technical sections in accordance with the requirements of the documents.
- 5. SUBMITTAL PROCESS AND RESPONSIBILITIES
 - 5.1. Contractor's RESPONSIBILITIES
 - 5.1.1. After the CM's and Architect's review, within one (1) week of receipt, Contractor is to distribute copies of the reviewed submittal to any supplier/fabricators, second or lower tier Contractors or other Contractors that must coordinate with this work. Contractor must maintain one copy at the Project Site for reference use.
 - 5.1.2. Do not begin Work which requires submittals until return of submittals with CM's and Architect's stamp and initials indicating review with direction to proceed from either CM or Architect..
 - 5.1.3. Contractor's responsibility for errors and omissions in submittals is not relieved by CM's or Architect's review of submittals.
 - 5.1.4. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by CM's or Architect's review of submittals unless CM and Architect give written acceptance of specific deviations.
 - 5.2. CM'S RESPONSIBILITIES
 - 5.2.1. CM's review is for general administrative purposes only and neither this review, nor any subsequent approval by CM of a submittal, shall relieve Contractor from its obligations to comply fully with the Contract Documents.
 - 5.2.2. CM will make changes or notations directly on the submittals, identify such review with its review stamp, sign and forward acceptable submittals to the Architect.

- 5.2.3. After the Architect's review, CM will forward submittals to the Contractor and retain one copy.

5.3. ARCHITECT'S RESPONSIBILITIES

- 5.3.1. Architect will review submittals within fourteen (14) Days after receipt, checking only for conformance with the design compliance of the Project and compliance with information given in the Contract Documents. If the submission is large and/or requires detailed or lengthy review by the Architect, additional time may be required.
- 5.3.2. Architect will return to CM without review any submittals not bearing the Contractor's or CM's review stamp or not showing that it has been reviewed by the Contractor and CM.
- 5.3.3. Architect will make changes or notations directly on the submittal, identify such review with its review stamp, obtain and record Architect file copy and return the submittal to CM.

5.4. RE-SUBMISSION REQUIREMENTS

- 5.4.1. For Shop Drawings: Review returned CM and/or Architect drawings and resubmit as specified. All changes made must be identified through bubbling or other approved method.
- 5.4.2. For Product Data and Samples Resubmit new data and samples as required.

END OF SECTION 01330

SECTION 01360
COORDINATION (GENERAL)

1 COORDINATION OF WORK/COOPERATION

- 1.01 All Contractors are required to review, discuss and coordinate their Work with the Work of other contractors, Owner and CM with regard to sequence, timing, built-in Work and equipment, layout, location, compatibility of materials and sizes and required clearances prior to beginning the work to avoid construction delays which impact the Owner's occupancy of the facility.
- 1.02 Each Contractor
- 1.02.1 Coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 1.02.2 Make provisions to accommodate items scheduled for later installation.
 - 1.02.3 Provide to all other trades all information (drawings, diagrams, templates, embedments, etc.) necessary for the coordination of the Work.
 - 1.02.4 Layout and install its Work at such time and in such manner as not to delay or interfere with the carrying forward of the Work of others.
 - 1.02.5 Verification and Acceptance of previous work
 - 1.02.5.1 As Work under each Agreement commences, the condition of preceding Work under other agreements shall be verified and accepted by each subsequent Contractor when appropriate.
 - 1.02.5.2 Report in a prompt manner any interferences, discrepancies or incompatibilities discovered to CM, whose decision as to the Contractor at fault and as to the manner in which the matter may be resolved, shall be binding and conclusive on Contractors involved. CM may direct layout/ location changes as required to make the entire work fit together. Reasonable changes of this nature will not entitle any Contractor to an increase in contract price.
 - 1.02.5.3 Verification may, at CM's discretion, include a joint review by the subsequent Contractor, previous contractor(s), and CM to note any corrective Work required, similar items affecting the Work and particularly items which prevent acceptance by the subsequent contractors.
 - 1.02.5.4 The verification review procedures and findings shall be submitted in writing by subsequent Contractors to the CM.
 - 1.02.5.5 Any corrective work necessary to satisfy requirements of the Contract Documents shall be performed promptly by the previous Contractor to prevent delay to the work under the subsequent Contracts.
 - 1.02.5.6 After corrective work is accomplished the subsequent Contractor shall furnish written acceptance of the work as noted above.
 - 1.02.5.7 CM's participation in a joint review under this paragraph shall in no event be deemed to constitute approval of any layout or other Work that fails to comply with the **Contract Documents**.
 - 1.02.6 Observation of the Work by others shall not relieve Contractor from its responsibility for coordination, supervision, or scheduling and direction of the Work.
 - 1.02.7 Failure of a Contractor to notify others and CM of a potential interference, incompatibility, or discrepancy and any failure to coordinate Work with that of others prior to installation and/or fabrication shall be at the Contractor's risk.

END OF SECTION 01360

SECTION 01370 COORDINATION DRAWINGS

1. GENERAL REQUIREMENTS

- 1.1. Contractor if required by its Work scope, shall be responsible for developing coordination drawings and participating in coordination meetings as defined herein, and shall have included the cost for such Work in its Bid Proposal.
- 1.2. Coordination Drawings shall be utilized to establish installation sequence, resolve trade coordination issues prior to installation and to make the most efficient use of space allocated for systems such as mechanical/electrical/plumbing installations without sacrifice to systems performance. This is also required to determine inter-relationships and possible interference's between all of the trades' Work and the architectural or structural features.
- 1.3. Contractors are required to attend coordination meetings as required by CM. The representative(s) from each Contractor is required to be familiar with the Work and have the expertise and authority to answer questions and make decisions and changes to its systems at these meetings.
- 1.4. The coordination drawings may also be used by Contractor as part of its required shop drawing and as-built drawing submittals.
- 1.5. Each Bidder should anticipate that each floor may require several meetings. However, in the interest of time, multiple floors or areas may be reviewed in one meeting. Development of coordination drawings will be by area and floor with order of priority established by CM.

2. COORDINATION DRAWING PROCESS

- 2.1. CM, after the award of the Agreements, will obtain 1/4" scale, screened mylars of the Structural, Reflected Ceiling and Architectural floor plans of the Project. CM will provide these mylars to the Contractors involved. The Electrical [Contractor, following an HVAC coordination kick-off meeting, shall immediately begin Work and prepare 1/4" scale layout drawings of all ductwork and piping. These drawings shall also show registers, grilles, diffusers, and similar features. Contractor shall include locations of all valves, dampers and shall note any items requiring access for service and maintenance as well as access doors in inaccessible ceilings. Drawings shall also show the size, layout and routing of all metal and flex ductwork, re-heat coils, terminal units, filters, and major hangers and supports. Contractor shall provide notation for diffuser boot sizes and heights and any other special features. Contractor shall provide cross sections and additional details through areas where clearances are tight and further detail as appropriate and/or required. Where piping or ductwork has external insulation, Contractor shall note or show locations and thickness. Contractor shall indicate bottom elevation of duct, pipes and equipment and elevation changes, to be measured to the lowest point including insulation and hangers where applicable.
- 2.2. In areas where no HVAC work occurs, but where other mechanical and electrical installations are installed, the Electrical Contractor will issue or note on transparencies indicating "No HVAC Work Required".
- 2.3. Within fifteen (15) working days of issuance of the mylars, the Electrical Contractor shall have completed layout drawings and provide to CM sixteen (16) prints for the first scheduled area. At this time all Contractors shall attend a Coordination Kick-Off Meeting at which time the first distribution of HVAC prints is made and procedures and schedule are reviewed.
- 2.4. As layout drawings for HVAC Work for subsequent areas are completed, the Electrical Contractor shall provide sixteen (16) prints of the completed layout drawings to CM. CM will in turn distribute two (2) prints to each required Contractor to include Plumbing, Fire Protection and Electrical Work. Respective Contractors shall then layout their own routings on the 1/4" scale mylars previously provided. Drawings shall include other major items such as valves, access panels, switch panels, pull boxes also noting items requiring access for service and maintenance, etc. as well as access doors in inaccessible ceilings.
- 2.5. Information for specific trades is required but not limited to the following:

- 2.5.1. Plumbing - Size, layout and routing of piping, valves, boxes, supports, etc., for all utilities regardless of material size. Show or note all pipe sizes and working clearances around valves, etc. For pitched piping, identify bottom elevations at key points and at least every column line. Note thickness and location of all external insulation. Bottom elevations shall be measured to the lowest point including hangers and insulation where applicable.
 - 2.5.2. Sprinkler Piping - Size, layout and routing of mains and branch piping, hanger and supports, valves, working clearances, and bottom of pipe and bottom of hanger support elevations. Sprinkler head locations shall be shown on ceiling plans. For pitched piping, identify bottom elevation at key points and at least at every column line.
 - 2.5.3. Electrical - Size, layout and routing and size of conduit and wire 2" or larger for normal and emergency power distribution systems, 1-1/2" or larger for communication systems telephone, nurse call, physiological monitoring, etc., include all systems specified, boxes larger than 4" x 4" x 4", hangers, supports, and electrical fixtures including lights, speakers, detectors, sensors, cable trays, raceways, etc. Size and clearance of ceiling and above ceiling mounted items shall be noted as a depth from finished ceiling to top of fixture or top of clear area required. Provide bottom elevations of conduits and equipment. Bottom elevation shall be measured from the lowest point, including hangers.
 - 2.5.3.1. Within four (4) feet of all panels, or areas where more than 4 conduits, regardless of size, are routed or grouped together, identify an easement or right-of-way for the groups of conduit.
 - 2.5.3.2. Also show all wall mounted items located within 12" of the ceiling plane.
 - 2.6. All Contractors, including Electrical Contractor, within ten (10) working days of issuance of HVAC prints, shall be prepared to attend coordination meetings as required by CM. They shall come to meetings with their completed mylars and two prints. Contractors, at the meeting, will work to review and overlay the mylars to identify and resolve interference's and coordination problems. Following the meeting, Contractors shall revise their mylars, if necessary, based upon the agreed changes and be prepared to meet again within five (5) working days of the first coordination meeting as scheduled by CM.
 - 2.7. When the mylars have been fully revised with no exceptions taken by respective Contractors, including the Electrical Contractor, the Contractors shall sign them, indicating their awareness of and agreement with the indicated routings and layouts and their inter-relationship with the adjoining or continuous Work of all Project contracts. Thereafter, no unauthorized deviations from the information provided will be permitted, and if made without the knowledge or agreement of the Architect and CM, this unauthorized Work will be subject to removal and correction at no additional cost to the Owner or the CM.
 - 2.8. Within five (5) Days of the signing of the coordination drawings, each Contractor shall provide CM with one (1) sepia mylar and sixteen (16) prints of the signed mylar. CM will in turn distribute two (2) prints each to the other contractors and retain one set of mylars and two sets of prints on file at the Project site.
- ### 3. EXECUTION
- 3.1. In the preparation of all coordination drawings, 1/2" scale details as well as cross and longitudinal sections are required to fully delineate all conditions. Particular attention shall be given to the locations, size and clearance dimensions of equipment items, shafts, corridors and similar features.
 - 3.2. After completion of the final coordination drawings, minor changes in duct, pipe or conduit routings that do not affect the intended function may be made as required to avoid space conflicts, when mutually agreed to by all parties involved. However, items may not be re-sized or exposed items relocated without CM's written approval. No changes shall be made by Contractors in any wall or chase locations, ceiling heights, door swings or locations, windows or other openings, or other features affecting the function or aesthetic effect of the building. If conflicts or interference's cannot be satisfactorily resolved, Contractors shall notify CM who will, in turn, obtain a decision from the Architect.

- 3.3. Other Contractors responsible for supplementary composite drawings, as indicated herein, shall make similar distribution to that described in item 1.03 Paragraph E. All trades desiring additional prints of such drawings, beyond the basic distribution indicated above, shall arrange for and pay the cost of same.
- 3.4. Record copies of final drawings shall be retained by CM and each Contractor as working reference. All shop drawings, prior to their submittal to CM shall be compared with the final drawings and developed accordingly by the Contractor responsible. Any revision to the drawings which may become necessary during the progress of the Work shall be noted to and by all Contractors and shall be neatly and accurately recorded on the record copies. Each Contractor shall be responsible for the up-to-date maintenance of its own record copies of the final drawings, and any subsequent changes thereto shall be utilized by CM and each Contractor in the development of As-Built/Record drawings described in Section 01720 of the Project Manual.
- 3.5. The HVAC drawings need not be submitted as a whole, but they shall be submitted in all cases per CM's project master construction schedule and in ample time to avoid construction delays. The coordination drawings of all trades may lack complete data in certain instances pending receipt of shop drawings, but sufficient space shall be allotted for the affected items. When final information is received, such data shall be promptly inserted on the final drawings.
- 3.6. No extra compensation will be paid for relocating any duct, pipe, conduit, or other material that has been installed without proper coordination between all Contractors involved. If any improperly coordinated Work, or Work installed that is not in accordance with the approved coordination composites, necessitates additional Work by the other Contractors, the costs of all such additional Work shall be solely borne by the Contractor responsible.
- 3.7. All changes in the Scope of Work due to revisions formally issued and approved shall be shown on that trade's final drawings and thoroughly coordinated with the other trades.
- 3.8. All Work on the coordination composite drawings shall be performed by competent draftsmen and shall be clear and fully legible. CM shall be sole judge of the acceptability of the drawings. All drawings shall be drawn dimensionally and graphically correct.
- 3.9. In general and before the first meeting the following guidelines shall be followed:
 - 3.9.1. All trades shall coordinate with the Electrical Contractor for the size, height and clearance requirements for recessed or semi recessed light fixtures, recessed speakers/detectors, and other electrical ceiling devices.
 - 3.9.2. Sprinkler heads shall be centered in the center of lay-in ceiling tiles unless approved shop drawings note otherwise.
 - 3.9.3. All elevations shall be based on height above finished floor using established benchmarks.
 - 3.9.4. Standard suspended ceiling systems requires 3" minimum clearance for materials and installation.
 - 3.9.5. Review of other drawings may be necessary for special structural and suspended equipment requirements.
 - 3.9.6. All trades to hang work as high as possible in above ceiling areas, allowing access to equipment for maintenance, repairs, connections, filters and removal without demolition of other Work.
- 3.10. Coordination drawings submitted during this process are not considered shop drawing submittals. The coordination drawings may be part of the required shop drawing submittal, but are made separate from the distribution specified in this section.

END OF SECTION 01370

SECTION 01400 QUALITY REQUIREMENTS

1. DOCUMENT CONTROL PROCEDURE

- 1.1. Each Contractor is to provide CM its document control procedure to include drawing submittals and surveillance. In the absence of such a procedure, the Contractor will use the following procedure for document control.

“A log is maintained identifying the drawing revision status, issue date and distribution (internal and external). The transmittal issuing the changed documents will indicate what changes are made and indicate that the documents are approved for use. Contractor meetings include a review of approved drawings. The review is documented in the meeting minutes. Superintendent surveillance activities include monitoring Contractor drawing use.”

2. QUALITY CONTROL

- 2.1. Each Contractor is responsible to provide the Owner with a completed quality product for its Work. Each Contractor shall be responsible for any costs associated with re-testing and re-performing the Work as a result of the Contractor's poor performance or workmanship or other failure to comply with the Contract Documents.
- 2.2. All Work shall be done by persons qualified in their respective trades, and the workmanship shall be first-class in every respect. **Each Contractor is responsible for ensuring employees are appropriately trained.** All materials and equipment furnished shall be the best of their respective kinds for the intended use and unless otherwise specified, same shall be new and of the latest design.
- 2.3. The Contractor shall provide CM, Owner and Architect access to the Work in preparation and progress wherever the Work is located at all reasonable times.

Note: CM and the Architect will have the authority to reject Work that does not conform to the Contract Documents or may require special inspection or testing, whether or not such Work is to be then fabricated, installed or completed. The Architect shall make all decisions with respect to questions concerning the quality or fitness of materials, equipment and workmanship.

- 2.4. Failure by a Contractor to conduct its operations, means and methods and coordinate proper sequencing of the Work may cause the Troy School District to withhold payment or any other means deemed necessary to correct non-conforming Work.

3. NOTIFICATIONS AND CORRECTIONS OF NON-CONFORMANCE

- 3.1. CM and the Architect may conduct observations/evaluations of the Contractor's Work. CM and/or Architect's reviews do not relieve the Contractor from compliance with the Contract Documents or necessary corrections for deficiencies thereof. Contractors whose Work does not meet the standards set by the Contract Documents will be notified by representatives of the CM using a Corrective Action Report. The Contractor, upon receipt of the Corrective Action Report, shall complete and return the form and provide the corrective actions necessary in a timely manner as outlined.
- 3.2. The **Corrective Action Report (CAR) (CON 18.2)** is in Section 01600 Forms.

4. CONTRACTOR PERFORMANCE EVALUATION

- 4.1. CM will be evaluating Contractor's performance and will provide feedback during the life of the Project, on Contractor's performance, for the purpose of improving CM's Contractor selection process for future project endeavors.
- 4.2. This Contractor Performance Evaluation form is generated by the CPS Database.

END OF SECTION 01400

SECTION 01450
TESTING AND INSPECTION SERVICES

1. CONTRACTOR'S RESPONSIBILITIES

- 1.1. The testing firm will report directly to the Troy School District. Copies of test and inspection reports will be furnished to the appropriate Contractors. The laboratory and its representatives will be instructed to promptly call to the attention of the Contractor any instance of non-compliance with the requirements of the Contract Documents. Failure to so notify the Contractor shall not relieve the Contractor of any of its responsibilities for compliance or making good workmanship or materials which are not in compliance with the requirements of the Contract Documents.
- 1.2. Each Contractor shall cooperate with the testing firm and provide labor to assist and lifts, ladders or other means to permit full access for testing firm and to assist with sample preparations where applicable.
- 1.3. The Contractor is responsible to pay the cost of additional testing in the event that additional testing of the Contractor's materials, installation, and other Work is required by the independent testing laboratory because of test results not in compliance with the Contract Documents and/or additional testing required as a result of Contractor's negligence or poor workmanship.

2. CONTRACTOR RESPONSIBILITIES

2.1. CONTRACTOR SHALL:

- 2.1.1. Notify CM sufficiently in advance of operations (24-hours minimum) to allow for laboratory assignment of personnel and scheduling of tests.
 - 2.1.1.1. When tests or inspections cannot be performed after such notice, reimburse Troy School District for all expenses incurred arising out of or resulting from Contractor's negligence.
- 2.1.2. When the Contractor is providing the testing and prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered engineer and responsible officer. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards (NBS) during most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

3. RE-TEST RESPONSIBILITY

- 3.1. Where the results of required inspections, tests, or similar services prove unsatisfactory and do not indicate compliance with the requirements of the Contract Documents, the re-tests shall be the responsibility of the Contractor regardless of whether the original test was the Contractor's responsibility.
- 3.2. Re-testing of Work revised or replaced by the Contractor is the Contractor's responsibility where required tests were performed on original Work. All costs and fees for re-testing shall be paid by the Contractor.
- 3.3. Schedule delays and costs which are the result of non-conforming work or remedy will be the responsibility of the offending Contractor.

END OF SECTION 01450

SECTION 01500 INTERIM LIFE SAFETY PLAN

1. PURPOSE AND POLICY

- 1.1. **PURPOSE:** To provide interim life safety measures during a construction Project. To protect Owner personnel, visitors, [patients] and property from fire and injury during remodeling or construction. This policy is used wholly or in conjunction with the safety program in the Project Manual.
- 1.2. **POLICY:** During a construction Project it shall be the responsibility of the Director of Facilities (or designee) and CM (through trade Contractors) to maintain compliance with the Life Safety Code NFPA Section 101. Compliance will be through the implementation of the following:

2. NOTIFICATIONS

- 2.1. Contractor shall communication and coordinate through CM for all changes to Life Safety measures including changes to: egress, the fire suppression system, the fire alarm system or any other Life Safety related changes to the construction site. Contractor is required to simultaneously notify the appropriate Owner personnel / departments: Owner's PM, Security, Facilities, Safety, Local and/or state fire, 911 emergency services, etc.
- 2.2. Advanced notification using the appropriate form shall be submitted not less than twenty-four (24) hours in advance of the work. Forms can be obtained through CM.

SHUTDOWN REQUEST TYPE	FORM NAME [VERIFY WITH OWNER'S REQUIREMENTS]	SUBMIT FORM IN ADVANCE OF PROPOSED WORK BY:	SUBMIT FORM TO:
CHANGE IN EGRESS:	Submit egress plan of existing exiting and proposed change	3 Weeks	CM; CM to schedule a review meeting with the Owner and Architect for final approval
Change in Fire Suppression	Sprinkler Shut-Down Request	1 Week	CM for initial review 5 days prior; upon approval from CM simultaneously submit to CM, Safety, Security, OTHERS
Change in Fire Alarm	Fire Alarm Shut-Down Request	1 Week	CM for initial review 5 days prior; upon approval from CM simultaneously submit to CM, Safety, Security, Owner's Insurance Agency, State and/or Local Fire Department, ,VERIFY OTHERS
Mechanical Piping, HVAC or Electrical Shut-Down	Utility Shut-Down Request	1 Week	CM for initial review 5 days prior; upon approval from CM simultaneously submit to CM, Safety, Facilities, Security, OTHERS

3. INTERRUPTION OF EXIT - EGRESS CORRIDOR

- 3.1. Should construction of temporary structures for egress/exit be necessary:

- 3.1.1. Contractor will review with and obtain approval from CM any changes to the means of egress. This review and approval shall include the Owner and Architect to confirm appropriate travel distances to exits are maintained/established.
- 3.1.2. Contractor shall obtain approval from the appropriate agency for any planned temporary exiting structure prior to construction/implementation.
- 3.1.3. All Contractors shall be responsible for maintaining temporary egress/exits:
 - 3.1.3.1. Each Contractor is responsible to protect, kept free of restrictions or obstructions, and maintain in full use all entrances to and exits from existing buildings and the construction site at all times. The safety and well-being of all persons must be of prime concern.
 - 3.1.3.2. Contractor shall maintain and not disturb any temporary construction, including stairs, ramps, protected walkways, railings, lights and direction signage as required to maintain adequate exiting from the existing building.
- 3.2. Should an alternate egress route be necessary:
 - 3.2.1. Contractor shall submit the appropriate forms to CM so all affected departments will be notified. Contractor shall not begin any work associated with a change in egress until the Owner has verified its internal departments are notified and prepared for the change.
 - 3.2.2. Contractor shall install and maintain temporary exit signage and Contractor shall install and maintain temporary directional signage prior to starting Work associated with the change in egress..
- 4. INTERRUPTION OF THE SPRINKLER SYSTEM
 - 4.1. Refer to the above matrix for advanced notification times and shut-down request distribution.
 - 4.2. Priority will be given to localized interruption of these systems on first shift Monday through Friday when full staff is available when any shut down is necessary:
 - 4.3. Contractor will provide an organized fire watch until the system is fully functional.
- 5. INTERRUPTION OF FIRE/SMOKE DETECTION AND ALARM SYSTEM
 - 5.1. Refer to the above matrix for advanced notification times and shut-down request distribution.
 - 5.2. Contractor shall maintain the operation of the total fire detection/alarm during the construction.
 - 5.2.1. It is acceptable for the Contractor to place a thin plastic cover over the detector head during high dust producing activities with Contractor's prompt removal upon completion of the work.
 - 5.2.2. At all other times the system will be returned to normal operating status.
 - 5.3. Should the fire/smoke detectors and alarms systems be interrupted:
 - 5.3.1. Contractor will provide an organized fire watch until the system is fully functional.
 - 5.3.2. Temporary alarm pull stations will be established as a minimum should the interruption last more than twenty-four (24) hours.
- 6. CONSTRUCTION SITE MAINTENANCE
 - 6.1. For interior construction. Contractor **shall**:
 - 6.1.1. Refer to the above matrix for prior notifications.
 - 6.1.2. Maintain existing Fire/Smoke Barriers and compartments.
 - 6.1.3. Provide and maintain temporary partitions adjacent to functioning departments that are a UL rated 2-hour assembly and smoke/dust tight and non-combustible. Provide documentation of the UL rated assembly type to CM prior to constructing this Work.

- 6.1.4. Maintain temporary enclosures, fire-rated dust curtains, and all other necessary materials and equipment as required to prevent introduction of dust, dirt or debris into occupied portions of the building.
- 6.1.5. Coordinate locking of the construction area with CM and the Owner.
- 6.2. For exterior construction - Contractor shall:
 - 6.2.1. Maintain site clearance for access to the external fire department connections.
- 7. REFERENCES
 - 7.1. All current Life Safety codes

END OF SECTION 01500

SECTION 01520 TEMPORARY CONSTRUCTION

1 SUMMARY

1.01 This Section describes the following requirements including:

- 1.01.1 Project Signage
- 1.01.2 Snow Removal
- 1.01.3 Security
- 1.01.4 Temporary Field Office, Facilities and Parking
- 1.01.5 Temporary Fencing
- 1.01.6 Temporary Toilet Facilities
- 1.01.7 Drinking Water/Temporary Water
- 1.01.8 Roof Protection
- 1.01.9 Scaffolding
- 1.01.10 Water Control
- 1.01.11 Temporary Material Hoist/Elevator
- 1.01.12 Fire Precautions and Protection
- 1.01.13 Noxious Odors and Fumes
- 1.01.14 Temporary Stairs, Ladders, Ramps, Runways, and Barricades
- 1.01.15 Temporary Electrical Power and Light
- 1.01.16 Temporary Heating and Weather Protection
- 1.01.17 Temporary Enclosures

2 CONSTRUCTION FACILITIES

2.01 PROJECT SIGNAGE

- 2.01.1 The CM shall provide a project sign. No other signs or advertising shall be displayed on the premises without the approval of the Architect, Owner, and CM. This does not exclude the posting of required trade notice and cautionary signage by Contractors.

2.02 SNOW REMOVAL

- 2.02.1 Contractors performing Work under exposed conditions shall remove snow and ice for the protection and execution of their Work. Keeping public traffic areas and circulation routes free of snow shall be the responsibility of the CM/DESIGNATED CONTRACTOR.

2.03 SECURITY

- 2.03.1 The services of a security guards will not be provided by CM.
- 2.03.2 Each Contractor, at its own cost and expense, may provide security guard, protective service or other means of site security as it deems necessary.
- 2.03.3 Contractors shall advise CM of any theft or damage which might delay the execution of the Work and furnish the Owner and CM with a copy of any theft report filed with local, county or state agencies.
- 2.03.4 Neither CM nor Owner assumes any responsibility for loss, theft or damage to the Contractor's materials or for damage to Work in place before the completion of the construction. In the instance of any such loss, theft or damage, the Contractor shall be responsible to renew, restore or

remedy the Work, tools, equipment and construction in accordance with requirements of the Contract Documents without additional cost to CM.

- 2.03.5 CM is not responsible for damage, liability, theft, casualty or other hazard to the automobiles or other vehicles, nor to injury, including death, to occupants of automobiles or other vehicles on the Owner's property.
- 2.03.6 CM may establish additional security policies and procedures. All Contractors will be required to cooperate with CM in implementing these procedures.
- 2.03.7 Site-parked equipment, operable machinery and hazardous parts of the new construction subject to mischief and accidental operation shall be inaccessible, locked or otherwise made inoperable when left unattended.

2.04 TEMPORARY FIELD OFFICE, FACILITIES AND PARKING

- 2.04.1 The Owner may designate an area for construction trailers. Placement and scheduled duration shall be coordinated by CM. Each Contractor is responsible to verify that all field offices, trailers and storage sheds shall be in accordance with the local Fire Marshal having jurisdiction. Each Contractor shall arrange and pay for its own telephone hookup and use. Each Contractor shall arrange and pay for its own temporary electrical hook-up, water and toilets. The Contractor shall pay for all power used for the Contractor's temporary field office and temporary electrical service. Construction personnel will be allowed to use the existing Owner parking facilities. Designated Contractors will be allowed to have on-site construction trailers. Construction trailers shall be limited to 10' x 30' or smaller.
- 2.04.2 Contractors shall maintain the use of designated space for offices and sheds. This includes removal of weeds, debris, trash and clean-up of the area after removal of such temporary structures.
- 2.04.3 Temporary field offices and sheds shall not be used for living quarters. .
- 2.04.4 Offices and sheds shall be of suitable design, maintenance and appearance, and meet the approval of CM and all applicable local codes and ordinances.
- 2.04.5 All temporary offices and sheds including foundations, must be removed within ten (10) days of written notice from CM including restoration of grade. Structures not removed in a timely manner will be removed by CM at Contractor's expense.
- 2.04.6 If a temporary office is built in the building, it must be fire treated in accordance with Section 01510, Fire Precautions and Protection.

2.05 TEMPORARY FENCING

- 2.05.1 The DESIGNATED CONTRACTOR shall provide temporary fencing with gates for required access and remove same at the completion of the Project.
- 2.05.2 The Contractors shall repair or replace fencing damaged as a result of its operation. Contractors shall remove and replace fencing and gates required to provide access for oversized items.
- 2.05.3 Contractor's personnel are not allowed to work outside of the construction fence without permission of CM.

2.06 TEMPORARY TOILET FACILITIES

- 2.06.1 The CM shall provide and maintain temporary toilet facilities for the construction of the Project. The use of the Owner's existing permanent facilities is as described in Section 01140 Use of Premises.
- 2.06.2 During renovation activities, CM may obtain, through the Owner, permission to use designated toilet facilities within the contract boundaries for construction use. The use of the Owner's existing permanent facilities outside the construction boundaries is strictly not allowed.

2.07 DRINKING WATER/TEMPORARY WATER

- 2.07.1 The Owner will pay for water used on this. Each Contractor shall be responsible to provide containers, paper cups, ice, hoses, etc. for its needs.
- 2.07.2 Immediately after award of the Agreement, the Mechanical Contractor shall furnish, install, maintain and subsequently remove a temporary hookup to the Owner's potable water system where directed by CM for construction purposes. The Contractor shall provide all temporary piping and approved backflow prevention as necessary for distribution from the source. Distribution of temporary water will be paid for by Contractors requiring same. A minimum of two (2) hose bibs shall be provided by the Mechanical Contractor as directed by CM.

2.08 ROOF PROTECTION

- 2.08.1 Contractors and their Subordinate Parties, shall be responsible for damages to roofing, sheet metal and roof structure while performing Work. The Roofing Contractor will perform the repair Work at the expense of the Contractor responsible for the damage.
- 2.08.2 All Contractors will protect adjacent existing roof surfaces while performing their Work. No construction materials will be allowed to be placed on existing roof surfaces without prior approval of the Owner through CM.

2.09 SCAFFOLDING

- 2.09.1 Each Contractor is responsible for providing and maintaining any and all ladders, scaffolds and other staging as required to complete its Work. All such ladders, scaffolds and staging equipment shall be erected, maintained and subsequently removed by each Contractor in accordance with all applicable safety laws, rules and regulations.

2.10 WATER CONTROL

- 2.10.1 All pumping, bailing or well point equipment necessary to keep excavations and trenches free from the accumulation of water during the entire excavating and backfilling progress of the Work shall be the responsibility of the Contractor performing said excavations and trenches due to its scope of Work.
- 2.10.2 Each Contractor shall be responsible for keeping the building at grade and below free from water from the time the building backfill is completed until the building is watertight.
- 2.10.3 Dispose of water in such a manner as will not endanger public health or cause damage or expense to public or private property. Abide by the requirements of any public agencies having jurisdiction.

2.11 TEMPORARY MATERIAL HOIST/ELEVATOR

Each Contractor is responsible for its own hoisting and material/ equipment movement costs as required to complete the Work under its Agreement.

- 2.11.1 CM may operate and maintain a permanent elevator until such time as all material hoisting requirements have been met. Elevator requirements in excess of the capacity or size of this elevator shall be provided by each Contractor at its expense. This elevator shall not be used for the placement of concrete, the transporting of workers, or other means inconsistent with its use as directed by CM. The operating cost for all overtime use of the elevator shall be paid by the Contractor requiring such services.
- 2.11.2 The Elevator Contractor shall be obligated to extend warranty and guarantee periods on any permanent equipment used prior to Substantial Completion.
- 2.11.3 Transportation of construction materials through the Owner's facility shall be accomplished in accordance with the requirements described in Section 01140 Use of Premises in such a manner so as to:
 - 2.11.3.1 Not damage any of the existing facility.
 - 2.11.3.2 Not impair the Owner's use of the facility.

2.11.3.3 Not create any type of mess or additional cleaning requirements in Owner occupied areas.

2.11.4 The Owner's lifting equipment is not available for the unloading, conveying or installation of Contractor's materials.

3 FIRE PRECAUTIONS AND PROTECTION

3.01 All Contractors and their Subordinate Parties shall

3.01.1 Assume full responsibility and take all necessary precautions to guard against and eliminate all possible fire hazards and to prevent damage to any construction work, building materials, equipment, temporary field offices, storage sheds, and all other property, both public and private.

3.01.2 Conspicuously post the location of the nearest fire alarm pull box and the telephone number of the local fire department within the field offices and on the construction site adjacent to its Work

3.01.3 Take precautions to prevent fire hazards in accordance with all fire protection and prevention laws and codes. No open fires shall be permitted.

3.01.4 Shall not be permitted to perform welding, flame cutting, or other operations involving the use of flame, arcs, or sparking devices without submitting a Hot Work Permit to CM a minimum of 24 hours prior or without adequate protection and shielding. Hot Work Permits can be obtained through CM. All combustible and flammable material shall be removed from the immediate area of the hot work. Material shall be protected with a fire resistant tarpaulin to prevent sparks, flames, or hot metal from reaching materials.

3.01.4.1 Only fire resistant tarpaulins shall be used on this Project.

3.01.5 Provide the necessary personnel and fire fighting equipment to effectively control incipient fires resulting from the hot work.

3.01.6 Provide its own fire extinguishers in the immediate area of the Work.

3.01.7 Review the entire Project at least once a week to make certain it has adhered to the conditions and requirements set forth herein.

3.01.8 Shall not bring into building at any one time more than a one day supply of flammable liquids such as oil, gasoline, paint or paint solvent

3.01.8.1 All flammable liquids having a flash point of 110 degrees F or below, which must be brought into any building, shall be confined to Underwriter's Laboratories' labeled safety cans.

3.01.8.2 The bulk supply of all flammable liquids shall be detached at least 75 feet from the building and from yard storage of building materials.

3.01.8.3 Spigots on drums containing flammable liquids are prohibited on the project site. Drums are to be equipped with approved vent pumps.

3.01.9 Not store or leave overnight within the confines of the permanent building any combustible materials.

3.01.9.1 This includes all internal combustion engines using gas or fuel oil.

3.01.9.2 Hoisting of flammable or combustible materials to the roof shall only be in quantities as needed for immediate use

3.01.10 Agree that, in the event of fire, all its workers anywhere on site will assist in extinguishing the fire

3.01.11 Coordinate with the Owner and CM the permanent fire protection water supply, fire extinguishing equipment, shut down and tie-ins between new and existing fire protection systems shall be installed at the earliest possible date.

- 3.01.11.1 As each sprinkler system is completed and placed in service, the control valve shall be sealed. Permission to break seals and close sprinkler valves shall be given only by CM with approval of the Owner.
 - 3.01.12 Not place shanties of combustible construction inside of any structure.
 - 3.01.12.1 Such shanties shall be detached at least seventy-five (75) feet from the building or as directed by CM with approval of the Owner.
 - 3.01.12.2 Totally incombustible shanties may be, if approved in writing by CM, located inside of the structure
 - 3.01.12.3 Use of only Underwriter's Laboratory approved heaters and/or stoves is permitted in field offices or storage sheds and they shall have fire resistive material underneath and at the sides near partitions and walls. Pipe sleeves and covering shall be used where stove pipe runs through walls or roof
- 3.02 FIRE EXTINGUISHERS
 - 3.02.1 Fire extinguishers shall be "all purpose", and not a water type, to meet the approval of the Fire Underwriter's Laboratory, and will be inspected at regular intervals and recharged if necessary.
 - 3.02.2 In areas of flammable liquids, asphalt or electrical hazards, extinguishers of the 15 lb. carbon dioxide type or 20 lb. dry chemical type shall be provided
 - 3.02.3 **CM** will provide and maintain in working order at all times during construction not less than a fire extinguisher for each 3000 sq feet with travel distance not to exceed 100 feet.
 - 3.02.4 All other required extinguishers shall be provided by the Contractor creating such hazard
- 3.03 NOXIOUS ODORS AND FUMES
 - 3.03.1 Combustion engine equipment, tar kettles and any other items causing noxious odors or fumes, including diesel powered equipment, will NOT be allowed in the building or near air intake louvers or building entrances and exits. If intake louver locations are in doubt, consult with CM.
- 4 TEMPORARY STAIRS, LADDERS, RAMPS, RUNWAYS, AND BARRICADES
 - 4.01 Each Contractor is to provide and maintain all necessary temporary stairs, ladders, ramps, and runways to facilitate conveyance of workers, materials, tools, and equipment for proper execution of its Work. All protection and safety barricades, devices, covers, and all other necessary items shall be provided by each Contractor as it relates to the safe conduct of its Work and protection of people and property in its Work area in accordance with applicable law.
 - 4.02 Any Contractor or Subordinate Party performing excavation Work shall be responsible to furnish, install and maintain temporary barricades and/or fencing of all open excavations until such time as the backfilling is complete. Flasher lights shall be provided on barricades and fencing by the Contractor as requested by CM and in accordance with applicable law. As a minimum, all barricades across roads and walks shall have lights on them in working condition.
 - 4.03 Prior to the removal of all shoring and forms, the DESIGNATED CONTRACTOR shall be responsible for temporary protection at the building floor perimeters and openings. Immediately after the removal of all shoring and forms, the DESIGNATED CONTRACTOR shall furnish, install, and maintain all necessary temporary protections at the building floor perimeters and openings. Protection shall be OSHA 29 CFR Part 1926.502 (B) "Guardrail Systems" and shall include but not be limited to two line rails and toe boards. Each Contractor that disturbs any temporary protection for its Work is responsible to reinstall to its original condition the guardrail or barricade system for the protection of the workers and others until final construction of perimeter exterior wall and/or shaft openings is completed. All other protection and safety barricades, devices, covers, etc., including those at all roof areas, shall be provided by the DESIGNATED CONTRACTOR] Contractor as it relates to the safe conduct of its Work in accordance with all local, state and federal law, rules and regulations and the requirements of the Contract Documents and shall be in accordance with the most stringent requirements.

- 4.04 The DESIGNATED CONTRACTOR shall provide temporary guardrails at the building floor perimeters, interior shafts, all roof areas, or other openings, immediately after the erection of the steel or precast frame and with the installation of metal or decking. Protection shall be OSHA 29 CFR Part 1926.502 (B) "Guardrail Systems" and shall include but not be limited to two line rails and toe boards. This temporary protector shall be left in place after completion of the steel or precast frame for the use of all other Contractors. The DESIGNATED CONTRACTOR shall maintain and remove said guardrails and patch concrete. Each Contractor that disturbs any temporary protection for its Work is responsible to protect the area during its Work and to reinstall to its original condition the guardrail or barricade system for the protection of the workers and others until final construction of perimeter exterior wall and/or shaft openings is completed. All other protection and safety barricades, devices, covers, etc. shall be provided by this Contractor as it relates to the safe conduct of its Work in accordance with all local, state and federal regulations and the requirements of the Contract Documents, and shall be in accordance with the most stringent requirements.
- 4.4. Each Contractor and its Subordinate Parties shall provide and maintain in good repair barricades, overhead protection, guard rails, etc., as required by law or necessary for the protection of the public and personnel engaged in the Work from hazards incidental to performance of the Work. Contractor shall do everything necessary to protect the Owner's employees, the public and workers from injuries and to protect vehicles and other property from damage.
5. TEMPORARY ELECTRICAL POWER AND LIGHT
- 5.1. Electrical Energy Costs
- 5.1.1. The Owner will pay for electrical energy to operate temporary electrical power and lighting for the duration of the project at designated locations. Temporary power will be provided free of charge.
- 5.2. Power Source
- 5.2.1. The Electrical Contractor shall provide, install, and pay for labor, equipment and materials required to make connections to the Owner's power source and to provide temporary electrical power and light distribution. The Electrical Contractor shall coordinate the location of the electrical power and lighting as directed by CM.
- 5.2.2. The Electrical Contractor will provide for the CM's construction trailer a 120/208 volt (or 120/240 volt), 100 ampere single phase power source. The cost of hook up and removal of temporary electrical service to other contractor's trailer shall be each Contractor's responsibility.
- 5.2.3. Protection shall be provided for the power supply source complete with disconnect switch and other required electrical devices.
- 5.3. Rules and Regulations:
- 5.3.1. All temporary equipment and wiring for power, lighting and distribution requirements shall conform to OSHA/NFPA requirements and be in accordance with applicable provisions of governing laws, codes, and ordinances.
- 5.3.2. All temporary wiring and distribution equipment shall be maintained so as not to constitute a hazard to persons or property.
- 5.4. Temporary Power Distribution:
- 5.4.1. The Electrical Contractor will provide and maintain temporary power distribution as follows:
- Construction power shall be 120/208 volts, 3 phase, 4 wire plus ground. Provide the following outlets together with feeders, grounding, protective devices and ground fault interrupting devices.
- 5.4.1.1. Power centers - on each floor of the new building, provide a minimum of two (2) power centers or not less than one (1) per 10,000 s.f. rated not less than 100 amperes at 120/208 volt, 3 phase. 4 wire plus ground. Within the remodeled areas, provide at least one (1) additional similarly rated power center. Locate the power centers such that each will serve approximately equal areas and as far as possible, each be in the center of the respective area served.

- 5.4.1.2. 120 volt duplex outlets - Provide weatherproof, G.F.I. protected, 20 ampere grounded outlets at a minimum rate equal to 1 - duplex outlet per 400 square feet. Outlets may be grouped in clusters of up to six duplex types with corresponding pro-rated increase in area served, provided that every portion of the construction and remodeled premises can be reached from the nearest outlet using a flexible cord no more than 50 feet in length.
- 5.4.2. As partitions are erected, locations of power distribution points shall be added or relocated.
- 5.4.3. Ground Fault Circuit Interrupter (GFCI) protection will be provided on all temporary power receptacles and, where possible, directly on the circuit breaker supplying temporary power as referenced in NEC 305-6(a).
- 5.4.4. The assured equipment grounding conductor program is only to be used on circuits greater than 20 amps as referenced in NEC 305-6(b).
- 5.5. Temporary Electrical Light Distribution:
 - 5.5.1. The Electrical Contractor shall provide and maintain temporary electrical light distribution as follows:
 - 5.5.1.1. Lighting shall be achieved using 120 volt guarded incandescent fixtures, or other suitable fixture types, to Federal or State OSHA required minimum levels of illumination.
 - 5.5.1.2. 120 volt temporary lighting as required in interior work areas. In addition to these minimum requirements provide adequate security lighting at guarded entrances outside storage areas, parking areas, and in areas of Contractor's and Architect's field offices and sheds.
 - 5.5.2. As partitions are erected or other interferences which hamper achieving the minimum levels of illumination, locations of lighting distribution points shall be added or relocated.
 - 5.5.3. Task lighting in addition to OSHA required lighting shall be provided by each Contractor.
- 5.6. Temporary Power and Light for Special Conditions:
 - 5.6.1. Special conditions for temporary electrical power and lighting required by others shall be provided as follows:
 - 5.6.1.1. Each Contractor requiring service of capacity or characteristics other than specified must make arrangements with the Electrical Contractor and pay for their own installation, removal, and service.
 - 5.6.1.2. Where 3 phase power is required, the Contractor must pick up service at the distribution panel located outside the building addition.
 - 5.6.1.3. The necessary grounded portable cords, lamps, light-stands, and fuses from the distribution outlets to points of use shall be provided by each Contractor to suit its own requirements.
 - 5.6.1.4. Temporary power cannot be used for welding operations.
- 5.7. Servicing of Temporary Power and Lighting:
 - 5.7.1. The Electrical Contractor shall be responsible for the following:
 - 5.7.1.1. Servicing, repairing and rearrangement of service equipment, temporary power, temporary lighting, and re-lamping.
 - 5.7.1.2. Removal and disposal of temporary electrical power and lighting at completion of the Project or when so directed by CM and repair of damage caused by installation or removal.
- 5.8. Permanent Electrical Power and Lighting:

- 5.8.1. When permanent electrical power and lighting systems are in operating condition, they may be used for temporary power and lighting for construction purposes provided the Electrical Contractor:
 - 5.8.1.1. Obtains the approval of the Architect and/or Owner through CM.
 - 5.8.1.2. Assumes full responsibility for operation of the entire power and lighting systems.
 - 5.8.1.3. Verifies that warranty dates are established prior to usage of equipment and lamps.
 - 5.8.1.4. Pays costs for operation, maintenance, and restoration of the systems.
- 5.8.2. As permanent power and lighting becomes available, these systems will generally supplant the appropriate portions of the temporary installation.

6. TEMPORARY HEATING AND WEATHER PROTECTION

- 6.1. Temporary heating requirements during the course of construction shall be divided into two categories as follows:
 - 6.1.1. Cold weather protection.
 - 6.1.2. Temporary heating.
- 6.2. Cold Weather Protection:
 - 6.2.1. Heating required during the construction period prior to enclosure of the building shall be classified as "cold weather protection."
 - 6.2.2. Each Contractor shall provide temporary heating and protection, necessary to allow its Work to continue during cold weather to meet the project milestone dates prior to building enclosure, including:
 - 6.2.2.1. The heating of materials (such as water and aggregate) as well as space heating for protection of newly placed or built construction at required temperatures (but not lower than 50 degrees F) and for the time specified.
 - 6.2.2.2. Fire retardant tarpaulins and other materials used for temporary enclosures.
 - 6.2.3. Each Contractor shall provide plan to allow Work to continue without regard to temperature.
 - 6.2.4. Heat shall be provided by smokeless UL approved portable unit heaters, using fuel of types and kinds approved by Underwriter's Laboratories, Factory Mutual, and the Fire Marshal.
 - 6.2.4.1. The Contractor shall provide fuel, power, maintenance, and attendance required for operation of portable heaters.
 - 6.2.4.2. Interior or exterior surfaces damaged by the use of portable heating units shall be replaced with new materials at the responsible Contractor's expense.
 - 6.2.5. It shall be the responsibility of each Contractor to protect its own Work.
- 6.3. Temporary Heating:
 - 6.3.1. Daily construction heat required after the building is enclosed shall be classified as "temporary heating" and will be the responsibility of the Mechanical Contractor to install and maintain.
 - 6.3.2. The building or buildings or any portions thereof shall be considered enclosed when in the opinion of CM:
 - 6.3.2.1. The exterior wall system and temporary interior wall enclosures are in place.
 - 6.3.2.2. Openings in exterior walls are covered to provide reasonable heat retention.
 - 6.3.2.3. The building is ready for interior drywall, masonry and plastering operations.
 - 6.3.2.4. The permanent roof is substantially installed.

The CM shall provide and maintain the temporary interior wall enclosures. If the exterior wall system is not complete in time to provide building enclosure of a portion of the new structure as scheduled, the CM shall provide and maintain temporary exterior wall enclosures of polyethylene and, in addition to exercising all other rights and remedies under the Contract Documents and law, CM shall be entitled to deduct the cost of such enclosures from the moneys due or to become due the Contractor(s) responsible for failure to meet said schedule.

- 6.3.3. In areas of the building or buildings where Work is being conducted, the temperature shall be maintained as specified in the various sections of the specifications, but not less than 50 degrees F for interior rough-in and not less than 60 degrees F during finishes installation. The temperature shall not be allowed to reach a level that will cause damage to any portion of the Work, including materials stored in the building, which may be subject to damage by low temperatures.
- 6.3.4. Until the permanent heating system, or suitable portion thereof, is in operating condition, provide sufficient and UL approved space heaters of suitable capacity to maintain required temperatures in areas where work is being conducted and materials are stored. Include all necessary maintenance, venting and attendance for this temporary heating to meet all applicable laws, rules and regulations.
- 6.3.5. When the permanent heating system, or a suitable portion thereof, is in operating condition, the system may be used for temporary heating, provided the Electrical Contractor:
 - 6.3.5.1. Obtains approval from CM in writing for its use and any special provisions required for its temporary operation.
 - 6.3.5.2. Assumes full responsibility for the entire heating system until final acceptance of the system by the Owner.
 - 6.3.5.3. Uses supply only, not return if temporary heating utilizes the building's ductwork system.
 - 6.3.5.4. Pays all costs for maintenance, attendance and restoration to "like new" condition of the system including final cleaning of equipment and ductwork and all necessary touch-up painting.
 - 6.3.5.5. Turns over satisfactory evidence to CM showing the extended warranties from manufacturers and proper maintenance procedures.
 - 6.3.5.6. Provides and maintains temporary filters, boxes and other parts used for the temporary condition and replaces same with the new permanent filters at time of occupancy consistent with the warranty provisions. The Electrical Contractor shall pay the cost of extending warranty and guarantee periods on any permanent equipment used prior to substantial completion.
- 6.3.6. Electrical power required for temporary heating will be furnished free of charge. The installation and service of the necessary temporary electrical feeders will also be the responsibility of the Electrical Contractor.

6.4. TEMPORARY ENCLOSURES

- 6.4.1. The Carpentry Contractor (or as specified in the Work Scopes) shall provide temporary (insulated) weather-tight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary heating, and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.
- 6.4.2. The Roofing Contractor (or as specified in the Work Scopes) shall provide temporary roofing as required to provide and maintain a watertight enclosure during construction.
- 6.4.3. The Drywall Contractor (or as specified in the Work Scopes) shall provide temporary partitions and ceilings as required to separate Work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas and to prevent damage to Owner's facilities and equipment.

END OF SECTION 01520

SECTION 01530
FIELD ENGINEERING AND LAYOUT

1 LAYOUT OF THE WORK; Each Contractor shall

- 1.1. be responsible for the layout and engineering of its own Work from the established points and lines given by a registered surveyor employed by CM and to coordinate with all other trades.
- 1.2. be responsible for detailed and accurate layout of its own and its Subordinate Parties' Work to dimension from the principal lines.
- 1.3. make provisions to preserve all control points, such as monuments, stakes, bench marks or other datum points and shall replace at its own cost any of these which might be lost or displaced through its neglect.
- 1.4. examine the conditions under which the Work is to be installed, shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Any errors, inconsistencies, omissions, discrepancies or conditions detrimental to proper performance of the Work that are discovered shall be reported to CM at once. Contractors are not to proceed until the required corrections are accomplished.

2. Verification and Documentation

- 2.1. The exactness of grades, elevations, dimensions, or locations given on any Drawings issued by Architect or the work installed by other contractors, is not guaranteed by Owner or CM.
- 2.2. In all cases of interconnection of its Work with existing or other Work, it shall verify all dimensions relating to such existing or other Work. Any errors due to the Contractor's failure to verify all such grades, elevations, dimensions, or locations shall be promptly rectified by the Contractor without any additional cost to the Owner or CM..
- 2.3. As the Work progresses, the Contractor shall prepare lay out drawings showing the exact locations of Work under its Contract as a guide to all trades. Prior to any installation, the separate Contractors shall exchange layout drawings and coordinate the Work and be subject to verification by all subsequent Contractors.
- 2.4. Each Contractor shall be responsible to take such field measurements as may be required to determine the size of ordered material. In the event "guaranteed dimensions" are required, the Contractor shall promptly advise other Contractors through CM by use of drawings, templates or mock-ups of the required conditions.
- 2.5. All Work, and in particular, piping, ducts, conduit and similar items, shall be neatly and carefully laid out to provide the most useful space utilization and the most orderly appearance. Except as otherwise indicated or directed, piping and similar Work shall be installed as close to above ceiling floor slabs and walls as conditions reasonably permit, located to prevent interference with other Work or with the use of the spaces. Before Contractor installs a valve in an exposed location, it must make all efforts to install it in an accessible, concealed location. Contractors shall carefully plan the layout and review any questionable installations with CM.
- 2.6. The Owner or CM may utilize a registered land surveyor to verify alignment and layout of certain portions of the Work. If that Work is out of tolerance or incorrect, the installing Contractor will be responsible for prompt correction of the Work to comply with the Contract Documents, along with all expenses incurred by Owner or CM in such verification process, including, but not limited to, the cost for the surveying services, as well as the additional time expended by CM personnel at standard billing rates.

END OF SECTION 01530

SECTION 01540 CUTTING AND PATCHING

1 INSPECTION

- 1.01 Before cutting , examine surfaces to be cut, including elements subject to damage or movement during cutting and patching work. Report any unsatisfactory or questionable conditions to CM in writing.
- 1.02 Before proceeding, meet at the site with CM and the parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference, conflict and possible effects on the Owner's existing operations. Coordinate procedures, temporary support, methods of dust and water protection, etc. and resolve potential conflicts before proceeding.
- 1.03 When working in and around existing buildings, if any hazardous material is encountered or is suspected to be present, immediately notify CM and stop work in this area as described in Section 00840 Hazardous Materials until further direction is given by CM or the Owner.

2 PREPARATION

- 2.01 Provide adequate temporary support to assure the structural value and integrity of the affected portion of the work. Where specified or required, submit temporary support methodologies for approval.
- 2.02 Provide devices and methods to protect adjacent areas or other portions of the Project from damage including dust protection, water protection, and exposure.
- 2.03 Maintain excavations free of water.

3 EXECUTION

- 3.01 The use of gasoline powered equipment, jackhammers or power actuated tools, explosives is prohibited on this Project.
- 3.02 Each Contractor shall:
 - 3.02.1 On behalf of itself and its Subordinate Parties be responsible for the cutting of all holes and openings through existing walls, partitions, ceilings, floors and roofs as necessary for the installation of its Work. Holes and openings shall be neatly cut and of minimum size to allow the Work to be installed. Execute cutting and demolition by methods which will prevent damage to other Work, and will provide proper surfaces to receive installation of repairs.
 - 3.02.2 Execute work in such a manner as to minimize disruptions to or interference with the Owner's normal operations or functioning in the existing buildings and provide all means necessary to provide safety and convenience of those employed in and about the premises.
 - 3.02.3 Be responsible for patching of all holes and openings it makes. Fit work should be airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. Patching is to match adjacent surfaces in materials and finish.
 - 3.02.4 Utilize only tradesmen skilled in the specific finish and material involved in making the patches. All patching is to be done in a neat and workmanlike manner to the satisfaction of CM. Defective Work shall be corrected at no cost to the Owner and CM.
 - 3.02.5 Do all necessary cutting and fitting required to make a satisfactory connection where new Work connects with existing so as to leave the entire Work in finished and workmanlike condition. Furnish all labor and materials to this end, whether or not shown or specified. All measurements must be verified at the site.
 - 3.02.6 Employ the original installer and fabricator, when possible, to perform cutting and patching for, weather-exposed or moisture-resistant elements, sight-exposed finished surfaces.
 - 3.02.7 Execute fitting and adjustment or products to provide a finished installation to comply with the specified products, functions, tolerances and finishes.

- 3.02.8 Restore Work which has been cut or removed and shall install new products to provide completed Work in accordance with the Contract Documents. Each Contractor will be responsible to pay the appropriate contractor as designated by CM for restoring any portion of the Project that is disturbed, including but not limited to, slabs, walls, ceilings, fire rated partitions, spray-on fireproofing, and finishes, to their original state as a result of Contractor's action.
- 3.02.9 Refinish entire surfaces as the Contractor's Work scope requires to provide an even finish to match adjacent surfaces and finishes, for continuous surfaces, refinish to nearest intersection, for an assembly, refinish the entire unit.
- 3.02.10 Be held responsible for reckless cutting of holes in slabs, walls or other finishes, or for scraping off areas of fireproofing larger or greater than that which is necessary for installation of its Work.
- 3.03 Removal and replacement of ceilings not scheduled to be replaced shall be the responsibility of the Contractor requiring access.

END OF SECTION 01540

SECTION 01550
CLEAN-UP AND FINAL CLEANING

A. SUMMARY

Execute final cleaning at completion of the Work, as required by this Section. For Contractor's daily clean-up, dust control and rubbish removal operations during construction, refer to Section 01520 Temporary Construction Controls.

a. DISPOSAL REQUIREMENTS

- i. Conduct final cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on Project site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.

2 PART 2 - SITE CLEAN-UP/RUBBISH REMOVAL PROCEDURE

2.1. REQUIREMENTS

2.1.1. General. Contractor shall:

- 2.1.1.1. Be responsible for daily, weekly and final clean-up of its Work and the work of its Subordinate Parties as defined herein.
- 2.1.1.2. Comply with applicable labor agreements and jurisdictional rules in the hiring of laborers to perform its clean up obligations under the Contract Documents.
- 2.1.1.3. Control of dust generated by its operations on a daily basis.
- 2.1.1.4. Maintain roadways clear of all debris at all times.
- 2.1.1.5. Only use cleaning materials which will not create hazards to health or property and which will not damage surfaces. Only those cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned shall be used.
- 2.1.1.6. Only use sweeping compounds that do not leave residue on concrete floor surfaces and that will not affect installation of finish flooring materials

2.1.2. Dumpsters:

- 2.1.2.1. Unless stated otherwise in the Work Scopes, the CM will provide and maintain the job site dumpsters for unidentifiable debris for use as specified below.
- 2.1.2.2. Each Contractor and its Subordinate Parties shall be responsible for daily clean-up, removal and placement in dumpsters of all debris and waste resulting from its operations.
- 2.1.2.3. No overfilling of dumpsters will be allowed. All adjacent areas are to be kept clean. Excavation, demolition, masonry, drywall and hazardous waste materials are NOT to be placed in CM's dumpster.
- 2.1.2.4. Each Contractor will be responsible for removing its own excavation, demolition, masonry, drywall and Hazardous Materials from the site in strict accordance with applicable laws and regulations regarding disposal.
- 2.1.2.5. Contractor shall indemnify, defend and hold harmless the Owner and CM from claims, damages, suits, costs, or expenses of any kind (including attorney's fees and costs) arising out of, resulting from or in connection with Contractor's misuse of dumpsters.

2.1.3. Daily Clean Up, Each Contractor shall:

- 2.1.3.1. Be responsible, DAILY for the clean -up, transport and removal from the site of identifiable debris including but not limited to, bulky debris, packaging, containers, unused materials and equipment, (i.e., masonry and concrete materials, drywall, steel, crates, carton, demolition debris, other packaging, and combustible items).
- 2.1.3.2. Leave no piles of debris in the building overnight. The cost of any overtime premium required to remove debris immediately at the end of each workday shall be included in the Contractor's Work.
- 2.1.3.3. handle materials in a controlled manner so that dust and other contaminants, do not affect the Owner's or other Contractor operations and equipment
- 2.1.3.4. Be responsible to leave its Work and work area in a clean condition. This includes, but is not limited to, removal of all grease, dust, dirt, stains, labels, fingerprints and other foreign matter.
- 2.1.4. Weekly Clean Up: Each Contractor shall:
 - 2.1.4.1. While on site, provide to CM one (1) person for each five tradesmen (or portion thereof) employed at the site, one day per week, for up to four (4) hours, for the exclusive purpose of performing overall project weekly clean-up of unidentifiable debris. The cost of this (these) person(s) shall be included in Contractor's Work.
 - 2.1.4.2. Include sweeping, loading and disposal of miscellaneous debris such as mud tracked through the building, drinking cups, bottles, lunch wrappers and other unidentifiable debris. Trash and debris from this operation shall be placed in the dumpster(s)
- 2.1.5. Final Clean Up:
 - 2.1.5.1. Final clean-up, will be done at a time designated by CM.
 - 2.1.5.2. Normally, Final Clean Up will occur before punchlist inspection or prior Owner Occupancy turnover.
 - 2.1.5.3. The Contractor's duties for Final Cleaning are:
 - 2.1.5.3.1. Prior to final completion or Owner occupancy, whichever occurs first, conduct an inspection of sight-exposed interior and exterior surfaces, and all Work areas, to verify that the entire Work is left in a broom clean condition and that all Final Cleaning as set forth above has been performed.
 - 2.1.5.3.2. Tunnels and closed off spaces shall be cleaned of packing boxes, wood frame members and other waste materials used in the construction.
 - 2.1.5.3.3. Temporary labels, stickers and similar items shall be removed from fixtures and equipment. Unless otherwise directed in the technical specifications, Contractors shall not remove permanent name plates, equipment model numbers, ratings, or other items intended to be permanently affixed to the fixture or equipment.
- 2.1.6. Use of Owner's Facilities: The Owner's facilities are not to be used by Contractor for the disposal of trash or debris from its Work.
- 2.1.7. Failure to perform Clean Up:
 - 2.1.7.1. If any Contractor or its Subordinate Parties fails to maintain a satisfactory clean-up program, CM will issue written notice, to the responsible Contractor, that the necessary clean-up must be performed within twenty-four (24) hours after the notice is given. The establishment of a definite deadline for the removal of debris and rubbish will supersede the necessity for any formal notification that such work must be done.

- 2.1.7.2. If Contractor(s) fail to perform the clean-up, by the deadline, CM may perform clean-up on the Project and back charge the responsible Contractor(s) for the costs. If necessary in order to remove unidentifiable debris beyond what is removed during weekly clean up, CM will perform such clean-up and shall pro-rate the cost among the Contractors in its discretion, based on Contractor(s) type of work and manpower on site. Back charges may be deducted from the monthly invoices of the Contractor(s) and/or final payment.
- 2.1.8. Hazardous Materials: Contractors or Subordinate Parties shall dispose of Hazardous Materials in strict accordance with applicable federal, state, and local laws and regulations. Hazardous Materials may not be placed in dumpsters and/or containers not so designated for such placement.

END OF SECTION 01550

SECTION 01600 FORMS

1 USE OF FORMS

- 1.01 Upon award of the Agreement, the various forms described and referenced in the Project Manual will be provided by CM and therefore are not bound in the Project Manual. Copies of forms are available for inspection at CM Office.
- 1.02 Following is a list of the key forms:
- 00810 Safety and Loss Control Program
 - Trade Contractor Safety Certificate (SAF 6.3.3.3)
 - 01250 Changes in the Work
 - PCO- Notice to Proceed
 - PCO- Quotation Only
 - Change Order Form (CMS.9.1 or CMS.9.2)
 - 01290 Payment Procedures
 - Application and Certificate for Payment (CON.27.1) and Continuation Sheet (CON.27.2)
 - Consent of Surety to Reduction In or Partial Release of Retainage (CON.26.6)
 - Payment schedule (PSI.10.1)
 - Payment Request for Stored Materials Form (CON.26.5)
 - Acknowledgment of Payment and Partial Unconditional Release Form (CON.26.3)
 - Unconditional Final Release and Waiver Subcontractor/Materialman Form (CON.26.4)
 - Sworn Statement Form (CON.26.2)
 - 01320 Communications
 - Trade Contractors Daily/Pre-Task Plan (CON.14.4)
 - Request for Information Form (CON.25.2) (in company approved software, if necessary)
 - 01330 Submittals
 - BMC Submittal Transmittal Form (CON.9.6)
 - 01400 Quality Requirements
 - Corrective Action Report (CAR)/Notice of Non-Conformance (NCR) (CON.18.2)
 - 01700 Contract Close-out
 - Consent of Surety Company to Final Payment Form (CON.26. 7)
 - Consent of Surety to Reduction in or Partial Release of Retainage Form (CON.26.6)
 - Certificate of Contract Completion Form (CLO.7.5)
 - 01720 Project Record Documents
 - Closeout Submittal (CLO.7.2)
 - 01740 Warranties and Guarantees
 - Contractor's Guarantee (CLO.7.3)
 - 01750 Systems Demonstration, Training and Start-up

- Equipment/Systems Acceptance Form (CLO.2.1)
- Owner Training Register (CLO.2.2)

END OF SECTION 01600

**SECTION 01630
PRODUCT SUBSTITUTIONS**

1. WORK INCLUDED

- 1.1. Furnish and install Products specified, under options and conditions for substitutions stated in this Section.

2. BIDDER'S OPTIONS

- 2.1. For products that are specified only by reference standard, select Product meeting that is standard by any manufacturer.
- 2.2. For Products specified by naming several Products or manufacturers, select any one of products and manufacturers named which complies with Specifications.
- 2.3. For Products specified by naming several Products or manufacturers and stating "or equivalent", or "or equal", or "or Architect approved equivalent", or similar wording, submit a request as for substitutions, for any Product or manufacturer which is not specifically named for review and approval by the Architect.
- 2.4. For Products specified by naming only one Product and manufacturer, there is no option and no substitution will be allowed.

3. SUBSTITUTION PROCESS

3.1. SUBSTITUTIONS

- 3.1.1. Base Bid shall be in accordance with the Contract Documents.
- 3.1.2. Substitutions for products may be made during the bidding period by submitting completed Substitution Request Form and substantiating product data/literature a minimum of ten (10) Days prior to Bid date to CM who will then forward to the Architect.
- 3.1.2.1. Architect will consider requests from the Bidder for substitution of products in place of those specified as set forth in this section.
- 3.1.2.2. Those submitted the specified calendar days prior to Bid Date will be included in an addendum if acceptable.
- 3.1.2.3. After the end of the bidding period, requests will be considered only in case of Product unavailability or other conditions beyond the control of Contractor.
- 3.1.2.4. Bid Proposals shall not be based on assumed acceptance of any item which has not been approved by addendum.
- 3.1.3. Bidders are required to submit a separate Substitution Request Form for each proposed substitution. Each substitution request should be accompanied by the following supporting documentation:
- 3.1.3.1. A full explanation of the proposed substitution.
- 3.1.3.2. Complete data substantiating compliance of the proposed substitution with the requirements stated in the Contract Documents.
- 3.1.3.2.1. Product identification, including the manufacturer's name and address.
- 3.1.3.2.2. Manufacturer's literature; identifying:
- 3.1.3.2.2.1. Product description and technical information.
- 3.1.3.2.2.2. Reference standards.
- 3.1.3.2.2.3. Performance and test data.
- 3.1.3.2.2.4. Installation instructions, operating procedures and other like information.
- 3.1.3.2.3. Samples, as applicable.

- 3.1.3.2.4. Names and addresses of similar projects on which product has been used, and date of each installation.
 - 3.1.3.3. Itemized comparison of the proposed substitution with the product specified, listing all significant variations.
 - 3.1.3.4. Data relating to changes in delivery or construction schedule.
 - 3.1.3.5. A list of all effects of the proposed substitution on separate contracts.
 - 3.1.3.6. Accurate cost data comparing the proposed substitution with the product specified.
 - 3.1.3.6.1. Amount of any net change to Contract Sum.
 - 3.1.3.7. Designation of required license fees or royalties.
 - 3.1.3.8. Designation of availability of maintenance services and sources of replacement materials.
 - 3.1.4. Substitutions will not be considered for acceptance when:
 - 3.1.4.1. They are indicated or implied on shop drawings or product data submittals without a formal request from Bidder.
 - 3.1.4.2. Acceptance will require substantial revision of Contract Documents.
 - 3.1.4.3. In judgment of Architect, do not include adequate information necessary for a complete evaluation.
 - 3.1.4.4. If requested after Contract Award directly by a subcontractor or supplier, except for special or unusual circumstances reviewed by the Contractor with CM.
 - 3.1.5. Substitute products shall not be ordered or installed without written acceptance of Architect.
 - 3.1.6. Architect will determine acceptability of proposed substitution.
- 3.2. BIDDER'S REPRESENTATION**
- 3.2.1. In making formal request for substitution the Bidder represents that:
 - 3.2.2. It has investigated the proposed product and has determined it is equivalent to or superior in all respects to the product specified.
 - 3.2.3. It will provide same warranties or bonds for the proposed substitution as required for the product specified.
 - 3.2.4. It will coordinate installation of the accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
 - 3.2.5. It waives all claims for additional costs caused by or arising from the substitution which may subsequently become apparent.
 - 3.2.6. Cost data is complete and includes related costs under its Agreement, but not:
 - 3.2.6.1. Costs under separate contracts.
 - 3.2.6.2. Architect's costs for redesign or revision of Contract Documents.
 - 3.2.7. Cost data need not be submitted, if request is for inclusion in an addendum. Requests after the Agreement is awarded shall contain a complete cost comparison.
 - 3.2.8. Any modifications necessary as a result of the use of an approved substitute shall be paid by the Contractor proposing the substitution.
 - 3.2.9. Any additional engineering costs required to be performed by the Architect to approve, implement or coordinate the substitution above reasonable review services, shall be paid by the Contractor proposing the substitution.

- 3.2.10. Under no circumstances will the Architect be required to prove that a product proposed for substitution is or is not equal to the quality of the product specified.

3.3. ARCHITECT'S DUTIES

- 3.3.1. Review requests for substitutions with reasonable promptness.
- 3.3.2. Coordinate review/approval of "Architect Approved" substitutions with the Owner prior to notifying the CM.
- 3.3.3. Issue a written instruction of decision to accept the substitution.
- 3.3.4. Substitution requests that are not approved will be returned to the party submitting the request with an explanation for the rejection.

3.4. SUBSTITUTION REQUEST FORM

- 3.4.1. The form is attached to this Section.
- 3.4.2. SUBSTITUTIONS WILL BE CONSIDERED ONLY WHEN THE ATTACHED FORM IS COMPLETED AND INCLUDED WITH THE SUBMITTAL WITH ALL BACKUP DATA.

SUBSTITUTION REQUEST FORM

TO: Barton Malow Company

We hereby submit for your consideration the following product instead of the specified item for the above Project:

DRAWING NO.: _____ **DRAWING NAME:** _____

SPEC. SECT.	SPEC. NAME	PARAGRAPH	SPECIFIED ITEM
_____	_____	_____	_____

Proposed Substitution:

Attached complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

Submitted by:

Signature_____
Title_____
Firm_____
Address_____
Telephone_____
Date

Signature shall be by person having authority to legally bind his/her firm to the above terms. Failure to provide legally binding signature will result in retraction of approval.

For use by Architect

☐ Accepted ☐ Accepted as noted
☐ Not accepted ☐ Received too late
☐ Insufficient data received

By: _____

Date: _____

For use by Owner

☐ Accepted ☐ Accepted as noted
☐ Not accepted ☐ Received too late
☐ Insufficient data received

By: _____

Date: _____

Fill in blanks below (attach additional sheets as required):

A. Does the Substitution affect dimensions shown on Drawings?

Yes _____ No _____ If yes, clearly indicate changes: _____

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

Yes _____ No _____ If no, fully explain: _____

C. What affect does substitution have on other contracts or other trades?

D. What affect does substitution have on the delivery and construction schedule? _____

E. Manufacturer's warranties of the proposed and specified items are: Same _____ Different _____

If different, explain on an attachment.

F. Reason for Request: _____

G. Itemized comparison of specified item(s) with the proposed substitution; list significant variations:

H. Accurate cost data comparing proposed substitution with product specified:

I. This substitution will amount to a credit or an extra cost to the Owner of:

_____ Dollars

(\$ _____)

END OF SECTION 01630

SECTION 01700 CONTRACT CLOSE-OUT

1. CLOSE-OUT PROCEDURE

- 1.1. The following procedure and forms will be used to sequentially progress through the contract close-out stage in a productive and timely manner.

1.1.1. PREPARATION FOR CONTRACT CLOSE-OUT

During the course of the Project, the Contractor will thoroughly review the Contract Documents as it relates to the requirements and obligations and gather and submit to CM the proper submittals, shop drawings, material certifications, waivers, certificates of insurance, bonds, and other contractual requirements impacting contract close-out.

1.1.2. INITIATING THE FINAL CLOSE-OUT PROCESS

When nearing 75% completion of the Work, the Contractor will review the status of the Close-Out process with CM. The Contractor's contractual responsibilities will be reviewed and outstanding close-out and other submittals identified.

1.1.3. OBTAINING THE CERTIFICATE OF SUBSTANTIAL COMPLETION

As the Contractor is nearing the completion of the Work and after concurrence with CM, it shall submit a written request for Substantial Completion, all required documentation as outlined, and a listing of all minor deficiencies yet to be completed.

The following documents are the minimum required at the time of request for Substantial Completion. Contractor shall also submit all additional documentation as required in the Contract Documents:

- 1.1.3.1. AIA G704 Certificate of Substantial Completion
- 1.1.3.2. As-built records
- 1.1.3.3. Operation and Maintenance Manuals
- 1.1.3.4. Keys, Maintenance Stock, and Spare Parts
- 1.1.3.5. Test and Start-up/Owner Training Sessions
- 1.1.3.6. Submission of Permits and Approvals (i.e. Fire Marshal, Department of Public Health Approvals, etc.)
- 1.1.3.7. Guarantee and Warranties
- 1.1.3.8. Punchlist (list of work to be completed or corrected)

Once CM has received all required documents they will be forwarded to the Architect and Owner. CM will review the Contractor's request for Substantial Completion; all above documentation, and list of deficiencies, add appropriate comments, and forward to the Architect and/or Owner for review. In conjunction with the Contractor, CM will establish a schedule for the completion of all listed items, which in no event shall exceed any time periods established in the Contract Documents for Final Completion.

When the Architect determine that the Work is substantially complete, the Certificate of Substantial Completion shall be issued to the Contractor.

1.1.4. CONTRACTOR COMPLETES PUNCHLIST WORK

Each Contractor shall submit a letter certifying all punchlist items are completed, in a manner acceptable to the Owner, CM and the Architect.

1.1.5. FINAL INSPECTION NOTICE

Each Contractor is to forward **(written notice and accompanying documentation)** to CM that Work is ready for final inspection and acceptance. CM will forward written notice to the Architect if CM is in agreement that Work is complete. The Architect will perform a final inspection and sign off on the punchlist form if Work is in fact completed. If punchlist work is not found complete, the Contractor shall take action to remedy any insufficiencies and then shall re-submit the written notice and accompanying documentation that Work is ready for **final** inspection and acceptance. If CM and/or Architect are required to perform more than 2 site visits to determine Substantial or Final Completion of Contractor's Work, the costs for such additional inspections shall be charged to Contractor.

The following documents are the minimum required to complete final payment. Contractor shall also submit all additional documentation as required in the Contract Documents:

- 1.1.5.1. Final Payment Request (on G702 & G703).
- 1.1.5.2. Guarantees/Warranties (including subs and suppliers).
- 1.1.5.3. Final Sworn Statements (including subs and suppliers).
- 1.1.5.4. Acknowledgment of Payment and Partial Unconditional Release
- 1.1.5.5. Final Release Subcontractor/Materialman
- 1.1.5.6. Certified Payroll Report (projects governed by prevailing wage laws)
- 1.1.5.7. Verification of Rate Classification and Payment (Federal projects)
- 1.1.5.8. Consent of Surety Company to Final Payment (AIA G707)
- 1.1.5.9. Consent of Surety to Reduction or Partial Release of Retainage (AIA G707A)
- 1.1.5.10. Certificate of Substantial Completion (on G704).
- 1.1.5.11. Completion and acceptance of all punchlist Work.

Items 1.1.5.2 through 1.1.5.5 must always be submitted with the final request for payment.

1.1.6. REVIEW OF FINAL PAYMENT REQUEST

CM and the Architect will review the Contractor's final payment request and Close-Out file. If all administrative documents are attached or have been submitted (i.e. guarantee, warranty, waiver of lien, etc.), all Work is complete, and all other responsibilities are met, the Project Team will forward the Contractor's Application for Final Payment to the Owner and payment shall be processed according to the Owner's regular procedures.

2. FINAL COMPLETION

- 2.1. To attain final completion, the Contractor shall complete activities pertaining to Substantial Completion, and complete Work on punch list items. Only then shall it issue written request to CM to conduct a site visit to determine Final Completion.
- 2.2. When Contractor considers the Work is finally complete, it shall submit written certification that:
 - 2.2.5. Contract Documents have been reviewed.
 - 2.2.6. Work has been inspected for compliance with Contract Documents.
 - 2.2.7. Work has been completed in accordance with Contract Documents.
 - 2.2.8. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 2.2.9. Work is completed and ready for final observation.
- 2.3. CM and/or Architect will make an observation to verify the status of completion with reasonable promptness after receipt of such certification.
- 2.4. Should CM and/or Architect consider that the Work is incomplete or defective:

- 2.4.5. CM will promptly notify the Contractor in writing, listing the incomplete or defective Work.
 - 2.4.6. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the CM that the Work is complete.
 - 2.4.7. CM and/or Architect will re-inspect the Work.
 - 2.5. When CM and/or Architect determines that the Work is acceptable under the Contract Documents, it shall request the Contractor to make close-out submittals.
3. CONTRACTOR'S CLOSE-OUT SUBMITTALS
- 3.1. Evidence of compliance with requirements of governing authorities (state, local or federal):
 - 3.1.5. Certificates of Inspection:
 - 3.1.5.1. Mechanical
 - 3.1.5.2. Electrical
 - 3.1.5.3. Others as required
 - 3.2. Project Record Documents: Refer to requirements of Section 01720.
 - 3.3. Operating and Maintenance Data, Instructions to Owner's Personnel: Refer to requirements of Section 01730.
 - 3.4. Warranties and Bonds: Refer to requirements of Individual Sections and Individual Technical Specifications and Section 01740.
 - 3.5. Spare Parts and Maintenance Materials: Refer to requirements of Individual Technical Specifications.
 - 3.6. Evidence of Payment and Release of Liens: Refer to requirements of General and Supplementary Conditions and Section 01290.

END OF SECTION 01700

SECTION 01720
PROJECT RECORD DOCUMENTS

1 SUMMARY

- 1.01 Each Contractor shall be responsible to maintain at the job site one copy of:
 - 1.01.1 Record Contract Drawings
 - 1.01.2 Record Project Manual
 - 1.01.3 Addenda
 - 1.01.4 Reviewed/Approved Shop Drawings
 - 1.01.5 Change Orders
 - 1.01.6 Other modifications to Contract
 - 1.01.7 Field test records
 - 1.01.8 Affidavits
- 1.02 Store documents apart from documents used for construction.
- 1.03 Maintain documents in clean, dry, legible condition.
- 1.04 Do not use project record documents for construction purposes.
- 1.05 Make documents available for inspection by the Owner, CM and the Architect.
- 1.06** Failure to maintain documents up-to-date will be cause for withholding payments to Contractor.
- 1.07 At the outset of the project, obtain from the Architect through the CM, at no charge to the Contractor, one complete set of Contract Documents including:
 - 1.07.1 Technical Specifications with all addenda.
 - 1.07.2 One complete set of prints of all Drawings.

2 RECORDING

- 2.01 Label each document "Project Record."
- 2.02 Keep record documents current.
- 2.03 Do not permanently conceal any work until required information has been recorded.
- 2.04 Contract Drawings:
 - 2.04.1 Contractor may at his option enter required information on a "working set" and then at completion of Project transfer the information to final submitted "Project Record" set.
 - 2.04.2 Contractor shall legibly mark to record actual construction:
 - 2.04.2.1 Depths of various elements of foundation in relation to survey data.
 - 2.04.2.2 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 2.04.2.3 Location and depths of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 2.04.2.4 Field changes of dimension and detail.
 - 2.04.2.5 Changes made by PCO- Notice to Proceed.

2.04.2.6 Details not on original Contract Drawings.

2.05 Technical Specifications and Addenda:

2.05.1 Contractor shall legibly mark up each section to record:

2.05.1.1 Manufacturer, trade name, catalog number and Supplier of each product and item of equipment actually installed.

2.05.1.2 Changes made by PCO- Notice to Proceed.

2.05.1.3 Other items not originally specified.

2.06 Conversion of Schematic Layouts:

2.06.1 Arrangement of conduits, circuits, piping, ducts and similar items are in most cases shown schematically on the Drawings.

2.06.2 Contractor shall legibly mark to record actual construction:

2.06.2.1 Dimensions accurate to within 1" of the center of items shown schematically.

2.06.2.2 Identify each item, for example, "cast iron drain", "galvanized water", etc.

2.06.2.3 Identify location of each item, for example, "under slab", "in ceiling plenum", "exposed", etc.

2.06.3 The Owner, Architect or CM may waive requirements of schematic layout conversion, when in their opinion, it serves no beneficial purpose. Do not, however, rely on waivers being issued except as specifically issued by the CM in written form.

3 SUBMITTAL

3.01 At completion of Project deliver, 1 set of electronic sets of Record Documents, in a format acceptable to the Owner and the Architect, using the Final Document Submittal Form (in Section 01600 Forms), to CM prior to request for final payment.

3.02 Accompany submittal with transmittal letter, in duplicate, containing:

3.02.1 Date

3.02.2 Project title and number

3.02.3 Contractor's name and address

3.02.4 Title and number of each record document

3.02.5 Certification that each document as submitted is complete and accurate.

3.02.6 Signature of Contractor, or his authorized representative.

END OF SECTION 01720

**SECTION 01730
OPERATIONS AND MAINTENANCE DATA**

1. SCOPE

- 1.1. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
- 1.2. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of the Technical Specifications.
- 1.3. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems in accordance with the requirements in Section 01750 Systems Demonstration, Training and Start-up.

2. QUALITY ASSURANCE

- 2.1. Preparation of data shall be done by personnel:
 - 2.1.1. Trained and experienced in maintenance and operation of described products.
 - 2.1.2. Familiar with requirements of this Section.
 - 2.1.3. Skilled as technical writer to the extent required to communicate essential data.
 - 2.1.4. Skilled as draftsman competent to prepare required drawings.

3. FORM OF SUBMITTALS

- 3.1. Prepare data in the form of an instructional manual for use by Owner's personnel.
- 3.2. Format:
 - 3.2.1. Size: 8-1/2" x 11"
 - 3.2.2. Paper: white, for typed pages.
 - 3.2.3. Text: Manufacturer's printed data, or neatly typewritten.
 - 3.2.4. Drawings:
 - a. Provide reinforced punched binder tab, bind in with text.
 - b. Fold larger drawings to size of text pages.
 - 3.2.5. Provide fly-leaf for each separate product, or each piece of operating equipment.
 - c. Provide typed description of product, and major component parts of equipment.
 - d. Provide indexed tabs.
 - 3.2.6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS." list:
 - e. Title of Project
 - f. Identity of separate structures as applicable.
 - g. Identity of general subject matter covered in the manual.
- 3.3. Binders:
 - 3.3.1. Commercial quality three-ring binders with durable and cleanable plastic covers.
 - 3.3.2. Maximum ring size: 3"
 - 3.3.3. When multiple binders are used, correlate the data into related consistent groupings.

4. CONTENT OF MANUAL

- 4.1. Neatly typewritten table of contents for each volume, arranged in systematic order.

- 4.1.1. Contractor, name of responsible principal, address and telephone number.
- 4.1.2. A list of each product required to be included, indexed to content of the volume.
- 4.1.3. List with each product, name, address and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify area of responsibility of each.
 - d. Local source of supply for parts and replacement.
- 4.1.4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
- 4.2. Product Data:
 - 4.2.1. Include only those sheets which are pertinent to the specific product.
 - 4.2.2. Annotate each sheet to:
 - e. Clearly identify specific product or part installed.
 - f. Clearly identify data applicable to installation.
 - g. Delete references to inapplicable information.
- 4.3. Drawings:
 - 4.3.1. Supplement product data with drawings as necessary to clearly illustrate:
 - b. Relations of component parts or equipment and systems.
 - c. Control and flow diagrams.
 - 4.3.2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 - 4.3.3. Contractor may use Project Record Documents as maintenance drawings - coordinate with CM.
- 4.4. Written text, as required to supplement product data for the particular installation:
 - 4.4.1. Organize in consistent format under separate headings for different procedures.
 - 4.4.2. Provide logical sequence of instructions for each procedure.
- 4.5. Copy of each warranty, bond and service contract issued.
 - 4.5.1. Provide information sheet for Owner's personnel, give:
 - a. Proper procedures in event of failure.
 - b. Instances which might affect validity of warranties or bonds.
- 5. MANUAL REVIEW AND PREPARATION SCHEDULE
 - 5.1. Submit two copies of preliminary draft of proposed formats and outlines of contents to CM prior to start of preparation.
 - 5.1.1. Architect will review draft and return one copy with comments.
 - 5.2. Submit 1 set of electronic copy of completed data in final form to the CM at least 2 months before the end of the project, for Owner review.
 - 5.2.1. Copy will be returned after final inspection or acceptance, with comments.
 - 5.3. Submit copies of completed operation and maintenance manuals at least two (2) weeks before execution and have at hand for use in demonstrations and instructions.

- 5.4. Submit specified number of copies of approved data in final form to the CM ten (10) days after final inspection or acceptance.

6. PRODUCTS

6.1. MANUAL FOR MATERIALS AND FINISHES

- 6.1.1. Submit 1 electronic copy of complete manual in final form.
- 6.1.2. Content, for architectural products, applied materials and finishes:
 - 6.1.2.1. Manufacturer's data, giving full information on products.
 - 6.1.2.1.1. Catalog number, size, and composition.
 - 6.1.2.1.2. Color and texture designations.
 - 6.1.2.1.3. Information required for reordering special-manufactured products.
 - 6.1.2.2. Instructions for care, maintenance and preventative maintenance.
 - 6.1.2.2.1. Manufacturer's recommendation for types of cleaning agents and methods.
 - 6.1.2.2.2. Cautions against cleaning agents and methods which are detrimental to product.
 - 6.1.2.2.3. Recommended schedule for cleaning and maintenance.
- 6.1.3. Content, for moisture-protection and weather-exposed products:
 - 6.1.3.1. Manufacturer's data, giving full information on products.
 - 6.1.3.1.1. Applicable standards.
 - 6.1.3.1.2. Chemical composition.
 - 6.1.3.1.3. Details of installation.
 - 6.1.3.2. Instructions for inspection, maintenance and repair.
- 6.1.4. Additional requirements for maintenance data: Reference sections of Technical Specifications.

6.2. MANUAL FOR EQUIPMENT AND SYSTEMS

- 6.2.1. Submit 1 electronic copy of complete manual in final form.
- 6.2.2. Content, for each unit of equipment and system, as appropriate:
 - 6.2.2.1. Description of unit and component parts.
 - 6.2.2.1.1. Function, normal operating characteristics, and limiting conditions.
 - 6.2.2.1.2. Performance curves, engineering data and tests.
 - 6.2.2.1.3. Complete nomenclature and commercial number of replaceable parts.
 - 6.2.2.2. Operating procedures:
 - 6.2.2.2.1. Start-up, break-in, routine and normal operating instructions.
 - 6.2.2.2.2. Regulation, control, stopping, shutdown and emergency instructions.
 - 6.2.2.2.3. Summer and winter operating instructions.
 - 6.2.2.2.4. Special operating instructions.
 - 6.2.2.3. Maintenance and Preventative Maintenance Procedures:
 - 6.2.2.3.1. Routine operations.
 - 6.2.2.3.2. Guide to "trouble-shooting".

- 6.2.2.3.3. Disassembly, repair and re-assemble.
 - 6.2.2.3.4. Alignment, adjusting and checking.
 - 6.2.2.4. Servicing and lubrication schedule.
 - 6.2.2.4.1. List of lubricants required.
 - 6.2.2.5. Manufacturer's printed operating and maintenance instructions.
 - 6.2.2.6. Description of sequence of operation by control manufacturer.
 - 6.2.2.7. Original manufacturer's parts, list, illustrations, assembly drawings and diagrams required for maintenance.
 - 6.2.2.7.1. Predicted life of parts subject to wear.
 - 6.2.2.7.2. Items recommended to be stocked as spare parts.
 - 6.2.2.8. As-installed control diagrams by controls manufacturer.
 - 6.2.2.9. Each Contractor's coordination drawings.
 - 6.2.2.9.1. As-installed color coded piping diagrams.
 - 6.2.2.10. Charts of valve tag numbers, with location and function of each valve.
 - 6.2.2.11. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 - 6.2.2.12. Other data as required under pertinent sections of specifications.
- 6.2.3. Content, for each electric and electronic system, as appropriate:
 - 6.2.3.1. Description of system and component parts.
 - 6.2.3.1.1. Function, normal operating characteristics and limiting conditions.
 - 6.2.3.1.2. Performance curves, engineering data and tests.
 - 6.2.3.1.3. Complete nomenclature and commercial number of replaceable parts.
 - 6.2.3.2. Circuit directories of panel boards.
 - 6.2.3.2.1. Electrical service.
 - 6.2.3.2.2. Controls.
 - 6.2.3.2.3. Communications.
 - 6.2.3.3. As-installed color coded wiring diagrams.
 - 6.2.3.4. Operating procedures:
 - 6.2.3.4.1. Routine and normal operating instructions.
 - 6.2.3.4.2. Sequences required.
 - 6.2.3.4.3. Special operating instructions.
 - 6.2.3.5. Maintenance and preventative maintenance procedures:
 - 6.2.3.5.1. Routine operations.
 - 6.2.3.5.2. Guide to "trouble-shooting".
 - 6.2.3.5.3. Disassembly, repair and re-assemble.
 - 6.2.3.5.4. Adjustment and checking.
 - 6.2.3.6. Manufacturer's printed operating and maintenance instructions.

- 6.2.3.7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- 6.2.3.8. Other data as required under pertinent sections of specifications.
- 6.2.4. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.
- 6.2.5. Additional requirements for operating and maintenance data: Reference sections of Technical Specifications.

END OF SECTION 01730

SECTION 01740 WARRANTIES AND GUARANTEES

1 GENERAL

- 1.01 Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

2 WARRANTY REQUIREMENTS

- 2.01 Deliver all written warranties and guarantees required by the Contract Documents with the Owner named as beneficiaries. All warranties shall include labor and materials, shall be signed by the manufacturer or subcontractor as the case may be, and countersigned by the Contractor. All written warranties shall be addressed to the Owner and delivered to CM upon completion of the Project, before or with the submission of Request for Final Payment.
- 2.02 In addition to all other warranties set forth in the Contract Documents or imposed by applicable law, Contractor warrants to Owner and CM that the Work will be free from defects and performed in strict conformity with the requirements of the Contract Documents. This warranty survives the termination of the Agreement and shall only be extinguished by limitation periods imposed by applicable law and shall not be limited by any other provisions contained in the Agreement, including any provisions or time periods related to Contractor's obligation to correct defective Work.
- 2.03 Contractor, upon signing the Agreement, shall obtain and forward to CM any and all Standard Product Warranties for products, materials and systems covered under its Agreement. The Manufacturer's warranties do NOT relieve the Contractor from its warranty obligations under the Contract Documents.
- 2.04 Special Warranties shall become effective on a date established by the Project Team. This date generally shall be the date of Final Completion of the Project or Substantial Completion of the Project or portions thereof as agreed upon by the Project Team. In the case of acceptance of a portion of the Work or Project, separate warranties shall be issued for those specific portions of the Project that were accepted, and shall be dated the date the specific portion was accepted. As additional Work is accepted, separate warranties for those specific portions of the Work shall be issued and properly dated. Issuance of warranties for a portion of the Work shall in no way become the basis for Application for Final Payment.
- 2.05 If for any reason, the Bidder cannot warrant any part of the Work using products, materials, or construction methods that have been specified or shown, it shall notify CM in writing at least ten (10) days before the bid submission date, giving reasons together with the names of products and data on substitutions it can guarantee. Should the Bidder fail to so notify CM within this time period, it will be bound to all warranties and guarantees as set forth in the Contract Documents.
- 2.06 Related Damages and Losses: In correcting Work that has been rejected as defective or otherwise failing to conform to the Contract Documents, whether before or after Substantial Completion, Contractor shall bear all related costs, including, but not necessarily limited to, the cost to correct the Work, the cost to correct all other Work that has been damaged by the defective or non-conforming Work, or that is damaged in the process of correcting the defective or nonconforming Work, and the cost of all additional testing and inspections and compensation for the Architect and/or CM's services and expenses made necessary thereby.
- 2.07 Reinstatement of Warranty: When Work covered by a warranty with a specific time period has failed and has been corrected by Contractor, the warranty shall be reinstated for a time period equal to the original warranty.
- 2.08 Express warranties are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available to the Owner or CM under the law. Express warranty periods shall not be interpreted as limitations on the time in which Owner or CM may enforce Contractor's duties and obligation or their rights and remedies under the Agreement and applicable law.

2.08.1 Rejection of Warranties: The Owner and CM reserve the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

2.09 Where the Contract Documents require a Special Warranty, or similar commitment on the Work or part of the Work, the Owner and CM reserve the right to refuse to accept the Work, until the Contractor presents evidence that the entities required to countersign such commitments are willing to do so.

3 SUBMITTALS

3.01 Submit electronic copies of the warranties to the CM within fourteen (14) days of Substantial Completion using the form found in section 01600-Forms and organizing the warranty documents into an orderly sequence based on the table of contents of the Project Manual. If the project Team's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of CM.

3.02 When the Contract Documents require Contractor, or Contractor and a Subordinate Party to execute a Special Warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the CM for approval prior to final execution.

3.03 Forms for warranties are included in Section 01600-Forms. Prepare a written document utilizing the appropriate form, ready for execution by Contractor and its Subordinate Party(ies). Submit a draft to CM for approval prior to final execution.

END OF SECTION 01740

SECTION 01750
SYSTEMS DEMONSTRATION, TRAINING AND START-UP

2 GENERAL

- 2.01 COORDINATE Procedures for demonstration of equipment operation and instruction of Owner's personnel through CM.

3 QUALITY ASSURANCE

- 3.01 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstrations and instructions have been completed.
- 3.02 CM will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

4 SUBMITTALS

- 4.01 Submit preliminary schedule to CM for Architect's and Owner's approval, listing times and dates for demonstration of each item of equipment and each system, at least two (2) weeks prior to proposed dates.
- 4.02 Submit electronic copies of the reports within one week after completion of demonstrations, that demonstrations and instructions have been satisfactorily completed. Give time and date of each demonstration, and hours devoted to demonstration, with a list of persons present.

5 PREPARATION

- 5.01 Provide substantiating information that verifies equipment has been inspected and put into operation; testing, adjusting, and balancing has been performed; and equipment and systems are fully operational.
- 5.02 Submit copies of completed operation and maintenance manuals at least two (2) weeks before execution and have at hand for use in demonstrations and instructions.
- 5.03 CM will develop a schedule for the system demonstration, training, start-up and turn over of all systems and equipment.

6 DEMONSTRATION AND INSTRUCTIONS

- 6.01 Demonstrate operation and maintenance of equipment and systems to the Owner's, CM's and Architect's personnel two (2) weeks prior to date of final inspection. For equipment requiring seasonal operation, perform instructions for other seasons within six months. Contractor shall document the testing, equipment start-up and training sessions as required using the following forms in Section 01600 Forms:
- 6.01.1 Equipment/System Acceptance - This form will be completed for each piece of equipment or system for each contract that requires operational testing and/or training before acceptance. This will document the date of testing, the equipment tested, names of personnel which witnessed the testing and acceptance.
- 6.01.2 Owner Training Register - This form will be completed for each contract that requires training to be provided to the Owner's personnel. This will document the date of training, type of training, names of the personnel trained and acceptance of the training.
- 6.02 The amount of time required for instruction on each item of equipment and system is that specified in individual sections or as mutually agreed upon between Contractor and CM.
- 6.03 Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.
- 6.04 Use operation and maintenance manuals as basis of instruction and review the contents of the manuals with personnel in full detail to explain all aspects of operations and maintenance.
- 6.05 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

- 6.06 Contractor is responsible for video taping the training sessions. The videotape should be of professional quality and the Owner should be provided with three (3) copies of the videotape.

END OF SECTION 01750

PROJECT MANUAL FOR THE CONSTRUCTION OF:

PROJECT:

SECURE ENTRANCE RENOVATION AND THEATER UPGRADES

BID PACKAGE NO. 7

TROY HIGH SCHOOL

OWNER:

TROY SCHOOL DISTRICT
4400 Livernois
Troy, Mi. 48098

TMP PROJECT NO.: 13174A

DATE: May 30, 2014

ISSUED FOR BIDS

ARCHITECT

TMP ARCHITECTURE, INC.
1191 West Square Lake Road
Bloomfield Hills, Michigan 48302-0374

PH (248) 338-4561
FX (248) 338-0223
Email info@tmp-architecture.com

CONSTRUCTION MANAGER

BARTON MALOW COMPANY.
26500 American Drive
Southfield, Mi. 48034

PH (248) 436-5000
FX (248) 436-5001

ELECTRICAL ENGINEER

PETER BASSO ASSOCIATES, INC
Consulting Engineers
5145 Livernois, Suite 100
Troy, Michigan 48098

PH (248) 879-5666
FX (248) 879-0007
Email info@pbanet.com

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017329	Cutting and Patching	017329-1 thru 4
017836	Warranties	017836-1 thru 5
017839	Electronic Project Record Documents	017839-1 thru 3

DIVISION 02 - EXISTING CONDITIONS

024119	Selective Demolition	024119-1 thru 9
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DIVISION 03 - CONCRETE

Sections

035300	Concrete Topping/Repair	035300-1 thru 4
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DIVISION 04 – NOT USED

DIVISION 05 - METAL

Sections

055000	Metal Fabrication	055000-1 thru 7
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DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

Sections

061000	Rough Carpentry	061000-1 thru 6
064023	Interior Architectural Woodwork	064023-1 thru 11

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

Sections

079200	Joint Sealants	079200-1 thru 8
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DIVISION 08 - OPENINGS

Sections

082250	FRP Doors	082250-1 thru 6
084113	Aluminum Entrances and Storefronts	084113-1 thru 8
087100	Door Hardware	087100-1 thru 21
088000	Glazing	088000-1 thru 11

DIVISION 09 - FINISHES

Sections

092900	Gypsum Wallboard Assemblies	092900-1 thru 16
093000	Tile	093000-1 thru 7
096519	Resilient Flooring Accessories	096519-1 thru 5
096810	Direct Glue-Down Carpet	096810-1 thru 4
096815	Carpet Tile	096815-1 thru 3
099100	Painting	099100-1 thru 10

DIVISIONS 10 and 11 – NOT USED

DIVISION 12 - FURNISHINGS

Sections

126100	Fixed Audience Seating	126100-1 thru 8
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DIVISIONS 13 thru 25 – NOT USED

DIVISION 26 – ELECTRICAL

Sections

260010	Electrical General Requirements	260010-1 thru 9
260500	Basic Electrical Materials and Methods	260500-1 thru 5
260519	Conductors and Cables	260519-1 thru 5
260526	Grounding and Bonding	260526-1 thru 12
260529	Hangers and Supports for Electrical Systems	260529-1 thru 7
260533	Raceways and Boxes	260533-1 thru 10

DIVISIONS 27 thru 33 – NOT USED

****END OF SECTION****

LIST OF DRAWINGS

TROY HIGH SCHOOL – 13174A BID PACKAGE 7SHEET NO. TITLEGENERAL INFORMATION

TS.1 COVER SHEET
TG.1 GENERAL INFORMATION

ARCHITECTURAL

AD.1 DOOR AND FRAME SCHEDULE
AD.2 DOOR AND WINDOW DETAILS

A0.2H SECOND LEVEL DEMOLITION PLAN – ZONE H
A0.2L SECOND LEVEL DEMOLITION PLAN – ZONE L

A1.2H SECOND LEVEL FLOOR PLAN – ZONE H
A1.2L SECOND LEVEL FLOOR PLAN – ZONE L

A2.2L SECOND LEVEL REFLECTED CEILING PLAN – ZONE L

A8.1 MILLWORK DETAILS AND ELEVATIONS
A8.2 INTERIOR ELEVATIONS

A10.2H SECOND LEVEL FINISH PLAN – ZONE H

ELECTRICAL

E0.1 ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2 ELECTRICAL STANDARD SCHEDULES
E0.3 ELECTRICAL COMPOSITE PLAN

ED1.1 AUDITORIUM ELECTRICAL DEMOLITION PLAN

E2.1 AUDITORIUM ELECTRICAL NEW WORK PLAN
E2.2 SECURED ENTRANCE ELECTRICAL NEW WORK PLAN

END OF SECTION

AVAILABILITY OF ELECTRONIC FILES

PART 1 – GENERAL

1.1 POLICY

- A. As a service to contractors, subcontractor, vendors, material suppliers and others needing electronic copies of drawing files, the Architect will provide CAD files electronically in accordance with the following policy:
1. By acceptance it is understood and agreed that the data and medium being supplied is to be used only for the project referenced.
 2. It is further understood and agreed that the undersigned will hold TMP Architecture harmless and indemnify TMP Architecture from all claims, liabilities, losses, etc., including attorney's fees arising out of the use or misuse of the transferred items.
 3. It is understood and agreed that the items transmitted are prepared from CAD files current at the time of preparation. All files are AutoCAD version 2009 dwg files.
 4. This information does not waive the need to verify and review current field conditions and the status of Addenda and/or Bulletin documentation.
 5. As a record of information to be transmitted, TMP Architecture will prepare a duplicate electronic back-up for its record.
 6. Compensation for providing this material will be as follows:
 - a. Base Fee of \$250 for 1 to 3 drawings.
 - b. Base Fee of \$500 for 4 to 10 drawings.
 - c. For each additional drawing after 10 the fee is \$40.00 per drawing (i.e., 11 drawings = \$540).
 7. Payment must be provided along with a signed copy of the Release Letter before files will be released.

1.2 REQUEST PROCEDURE

- A. To receive files the attached Release Letter must be completed in full and submitted to the Construction Manager to be forwarded to the Project Manager at TMP Architecture.
1. A signed copy of the Release Letter must be submitted; faxed or emailed copies will be accepted.
 2. Upon remittance of the signed Release Letter and Fee, allow five working days for processing.
 3. Transmission of documents will be provided electronically after the receipt of payment.

Date: _____

Firm Requesting Files:

Name: _____

Company: _____

Address: _____

City, State, Zip: _____

Re: Letter of Authorization for CAD File Transfers

Project Name: _____

TMP Project No. : _____ Bid Pack No. : _____

Dear Sir:

Per your request, TMP Architecture will transmit the requested CAD files in the form of CD-ROM upon receipt of an original signed copy of this letter with conditions of agreement as stated.

1. By acceptance it is understood and agreed that the data and medium being supplied is to be used only for the project referenced.
2. It is further understood and agreed that the undersigned will hold TMP Architecture harmless and indemnify TMP Architecture from all claims, liabilities, losses, etc., including attorney's fees arising out of the use or misuse of the transferred items.
3. It is understood and agreed that the items transmitted are prepared from CAD files current at the time of preparation. All files are AutoCAD 2009.
4. This information does not waive the need to verify and review current field conditions and the status of Addenda and/or Bulletin documentation.
5. As a record of information to be transmitted, we will prepare a duplicate back-up for our files, which may be electronic or hard-copy.
6. Compensation for providing this material will be as follows: Base Fee of \$250 for 1 to 3 drawings and a Base Fee of \$500 for 4 to 10 drawings; for each additional drawing after 10 the fee is \$40.00 per drawing (i.e., 11 drawings = \$540). Payment must be provided along with a signed copy of this form before files will be released. Please remit to TMP Architecture and allow five working days for processing.

Fee: \$_____ Drawings: _____

Signed: _____ Printed Name/Title: _____

Firm Requesting: _____

Phone: _____ Fax: _____

To Be Completed By TMP Architecture, Inc.

Released (signed by): _____ TMP Architecture, Inc.

Printed Name/Title: _____ Date: _____

****END OF SECTION***

SCHEDULE OF REQUIRED SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: General Requirements and schedule tabulating submittals required under the individual Trade Sections.
- B. Related Work: The following submittals are described under other Sections of these Specifications:
 - 1. Division 01 Section "Related Documents Submittal Procedures" for shop drawings.
 - 2. Division 01 Section "Project Record Documents" for project record documents.
 - 3. Division 01 Section "Warranties" for warranties and warranty services.

1.2 SUBMITTALS

- A. Submittals schedule is for reference only and is not necessarily complete. Specific requirements are included in the respective Trade Sections.
- B. Description of submittals and definitions of terms are included under other Sections of Division 1.
- C. Submittal of Materials for Approval:
 - 1. See Division 01 "Product Requirements" for requirements for materials submittals.
 - 2. All materials requiring Manufacturer Services or Warranty shall be submitted in the form specified under "Warranties".
 - 3. Standard materials may be submitted in tabular form. Where necessary to clarify proposed use, submit as a Shop Drawing a schedule of applications or a drawing showing proposed locations.

1.3 SCHEDULE

- A. The Contractor shall prepare a schedule relating and conforming to the Approved Construction Schedule. Said Schedule shall recognize and allow for lead time, including lead time required by Subcontractors and Manufacturers, and time required for Architect's review in compliance with the Contract Documents for all submittals.
- B. This Schedule shall be submitted to the Owner and the Architect for approval prior to the second Request for Payment.
- C. Exact procedures and time schedules for submittals will be determined at the time Job Progress Schedule is established. Time schedule for submittals shall be periodically revised and adjusted to coordinate with job progress.

1.4 EQUIPMENT ROOM LAYOUT DRAWINGS

- A. Each Contractor shall prepare and submit equipment room layout drawings, as called for under "Shop Drawings and Samples," for all equipment furnished under its Contract.

- B. Scale (Minimum): 1/4 inch equals 1 foot.

1.5 CERTIFICATE OF COMPLIANCE

- A. Each certificate required for demonstrating proof of compliance of materials with specification requirements, including mill certificates, shall be executed in quadruplicate. It shall be the Contractor's responsibility to review all certificates, before submittal, to ensure compliance with the Contract Documents.
- B. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location and the quantity and date or dates of shipment or delivery to which the certificate applies.
- C. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.6 SPARE PARTS DATA

- A. The Contractor shall furnish spare parts data for each different item of equipment furnished if and as called for in the Trade Sections.

1.7 SAMPLES

- A. After the award of the Contract, the Contractor shall furnish, for approval, samples required by the Specifications. The Contractor shall prepay all shipping charges on samples.
- B. Materials or equipment for which samples are required shall not be used in the work until approved in writing.

1.8 OPERATION AND MAINTENANCE MANUALS

- A. Where required by the Specifications, Operation and Maintenance Manuals shall be provided by the Contractor as specified under "Project Record Documents".
- B. Provide all manuals, parts information and similar data which the Architect may determine to be necessary for proper operation and maintenance.
- C. The manuals shall cover the operation requirements of each item specified to require operational and maintenance manuals, and shall include standard maintenance procedures and recommended schedules for routine service. The manuals shall be submitted to the Architect ten (10) days prior to final tests of mechanical and electrical system.

1.9 TEST PROCEDURES AND TEST RESULTS

- A. Where required by the Technical Specifications test procedures and test results shall be provided by the Contractor in quadruplicate. Test procedures shall cover all items required by the Technical Provisions and as specified under "Laboratory Testing and Inspection."

END OF SECTION

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: General Requirements for preparation, submittal, and distribution of Shop Drawings, Samples, Product Data, and similar information required to be furnished by the Contractors.
- B. Related Work: The following items of work are specified under other Sections of these Specifications:
 - 1. Division 01 Section "Project Record Documents" for project record documents.

1.2 DEFINITIONS

- A. Samples: See General Conditions.
 - 1. Preliminary Samples: Hand made or simulated examples or proposed materials submitted to demonstrate anticipated finished appearance.
 - 2. Product Samples: Representative examples of materials proposed for use.
 - 3. Range Samples: Samples showing extremes of variations in appearance, texture or color and the limits within which the Contractor agrees to hold the materials used in the work.
 - 4. Sample Installation: Trial run or initial example provided for review and acceptance by the Architect before continuing with the work.
 - 5. Test Samples: Samples provided for purposed of physical or chemical test analysis. If samples are submitted directly to the Testing Laboratory, submit copy of letter of transmittal.
- B. Shop Drawings: See General Conditions
 - 1. Electronic File: Drawings and other data submitted electronically in PDF format only.
 - 2. Preliminary Shop Drawings: Drawings and other data submitted electronically prior to acceptance of systems and only required to show information necessary for evaluation and coordination with other work.
 - 3. Project Shop Drawings: Drawings and other data illustrating materials and assemblies proposed for the Project.
 - 4. Coordination Drawings: Original electronic drawings prepared by the Trades to investigate conflicts and coordinate locations of each with the work of the other.

- C. Identification: All shop drawings, samples and product data shall be identified by the project title, Construction Manager's name, the Architect's name and the Architect's project number or numbers.

1.3 ELECTRONIC SUBMITTAL PROCEDURES

A. Summary:

1. Shop drawing and product data submittals shall be transmitted to the Construction Manager in electronic (PDF) format using Submittal Exchange, a website service designed specifically for transmitting submittals between construction team members.
2. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
3. Physical samples (color samples, color charts, physical material samples, etc.) will be accompanied by an electronic transmittal processed through Submittal Exchange. Refer to Paragraph 1.4E for additional information.

B. Procedures:

1. Submittal Preparation –Subcontractors and Suppliers may use any or all of the following options as directed by the Construction Manager.
 - a. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via email.
 - b. Subcontractors and Suppliers provide paper submittals to General Contractor who electronically scans and converts to PDF format and submits to the Construction Manager by uploading to Submittal Exchange.
2. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.
3. Contractor shall transmit each submittal to Construction Manager using the Submittal Exchange website, www.submittalexchange.com.
4. Construction Manager shall transmit each submittal to the Architect using the Submittal Exchange website, www.submittalexchange.com.
5. Architect / Engineer review comments will be made available on the Submittal Exchange website for downloading. Construction Manager will receive email notice of completed review and send notification to the Contractor.
6. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
7. Submit electronic copies of reviewed submittals at project closeout for record purposes in accordance with Section 017800 – Closeout Submittals

C. Costs:

1. Cost of data management service (Submittal Exchange) shall be paid for by the Project Owner thru the Construction Manager.
2. At Contractor's option, training is available from Submittal Exchange regarding use of website and PDF submittals. Contact Submittal Exchange at 1-800-714-0024.
3. Internet Service and Equipment Requirements:
 - a. Email address and Internet access at Contractor's main office.
 - b. Adobe Acrobat (www.adobe.com), Bluebeam PDF Revu (www.bluebeam.com), or other similar PDF review software for applying electronic stamps and comments.

1.4 GENERAL REQUIREMENTS FOR ELECTRONIC SUBMITTALS:

- A. Contractor shall transmit each submittal (shop drawings and product data) to the Construction Manager using the Submittal Exchange website, www.submittalexchange.com. Submittals are to be made in the following form.
 1. Shop drawing: Combined together into one pdf file for each assembly.
 2. Product data: Provide product data in individual pdf file.
- B. File naming shall be in the following format. Specification Section Number-consecutive number of submittal for that section Description of file being submitted.
 1. Example: 079200-01 Joint Sealants.pdf.
- C. Contractor shall fill out the TMP Shop Drawing and Sample Transmittal Form found at the end of this Section and include at the beginning of the file. An electronic version of Transmittal Form is available upon request from the Architect, thru the Construction Manager.
- D. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work prior to notifying the Construction Manager that the submittal is read for review.
- E. Physical Samples must be submitted through the Construction Manager and must be accompanied by an electronic (PDF) copy of the completed TMP Shop Drawing and Transmittal Form. Electronic Transmittal Form must be submitted to the Construction Manager using the Submittal Exchange website.

1.5 SCHEDULES

- A. Prepare Shop Drawing Submittal Schedule as required.
- B. Recognize and allow for lead-time required for manufacture, fabrication, delivery to the site, and for review.
- C. Arrange schedule in orderly sequence in compliance with Project Schedule.

- D. Request for approval of materials, systems, substitutions, or for deviations from the Contract Documents shall be submitted according to Section 016000 – “Product Requirements” and shall be Preliminary submittal with allowances for time for review prior to submittal of Product Samples or Project Shop Drawings.

1.6 SAMPLES - GENERAL

- A. Samples in general, are required for all materials that form an exposed part of the finished Project. Samples of concealed components are not required unless specifically called for.
- B. Typical Samples shall be taken from production run material and shall be representative examples of proposed quality and finish.
- C. Preliminary Samples shall, as far as possible, anticipate the quality and finish of production run material.
- D. Samples will be retained at the job site for comparison purposes. Samples of manufactured items will be returned to the Contractor for installation in the Work after approval of materials. Use in locations where directed.
- E. All materials in the completed installation shall be equal in every respect to the approved product samples and within the limits defined by the approved range samples.

1.7 SAMPLES SUBMITTALS

- A. Size and quantity, unless otherwise specified: Four (4) each; 8 inches by 12 inches, or 12 inches long, as applicable; not over one inch thick for masonry or cementitious materials.
- B. Preliminary or Range Samples shall be resubmitted as directed until an acceptable Sample or Range is established, at which time Project Samples shall be submitted.
- C. Furnish Samples to other trades where required to match color or finish.
- D. Required Samples are scheduled or are listed in the Trade Sections. Optional Samples will be accepted and reviewed by the Architect.
- E. Review will be for shape and appearance only. Physical and chemical properties shall be established by adequate documentation that shall accompany samples.
- F. In all cases where preliminary approval samples have been submitted, final production run, or in-place installation samples will be required for verification.
- G. Notify Construction Manager and Architect in advance and obtain directions for place and time to ship large, heavy or bulky samples. Ship such samples "Prepaid." If return is requested, they will be returned "Collect."

1.8 SHOP DRAWINGS AND PRODUCT DATA - GENERAL

- A. Shop Drawings shall be prepared by a qualified detailer and shall be complete including erection diagrams and shall show the fabrication and construction of all items required for complete assembly.
- B. Provide pertinent information relating to installation and connection to work of other trades, and coordinate with work of other trades as required for proper placing, anchorage and support of the work. Indicate in detail, the precise location and spacing of all embedded anchor bolts, sleeves and other features required to be placed in the concrete, structural steel or masonry or otherwise required to be built into the structure.
- C. Identify details by reference to the Contract Drawings, other Shop Drawings or other information as required to properly identify and locate the portion of the Work covered.
- D. Indicate on the Drawings and explain by covering letter all proposed deviations from the requirements of the Contract Documents.
- E. Manufacturer's Standard Documents:
 - 1. Drawings and similar documents provide in PDF version from original documents: Modify drawings to delete information which is not applicable to the Project, provide additional information where required and submit electronically.
 - 2. Brochures and other pre-printed data, clearly mark PDF information as follows:
 - a. Identify pertinent material, product, and model.
 - b. Number or otherwise reference each item to applicable Contract Document or other Shop Drawing.
 - c. Show dimensions and clearances required.
 - d. Provide all other information required for Shop Drawings including, where applicable, wiring diagrams and controls.
 - e. Delete all options, or variations from the Contract Documents, except where such items are specifically noted as proposed deviations.
- F. Where proper installation of the work requires that other work be set to special detail, held to tolerance, or dimension be established, so indicate on the Shop Drawings.
- G. Where items must fit spaces previously constructed, take measurements at the site, not from drawings.
- H. Where applicable, indicate mechanical and electrical characteristics of, or required to be provided for, the material shown on the Shop Drawings.
- I. Each shop drawing or coordination drawing shall have a blank area (5 x 8 inches), located adjacent to the title block. The title block shall display the following:
 - 1. Number and title of drawing
 - 2. Date of drawing or revision
 - 3. Name or project building or facility

4. Name of Contractor and (if appropriate) name of Subcontractor submitting drawings.
5. Clear identity of contents and location of the work.
6. Project title and contract number.
7. Initials or party preparing drawings.
8. Signature of party responsible and, where applicable, professional engineers seal.

1.9 SHOP DRAWINGS - TYPES

A. Preliminary Shop Drawings:

1. Preliminary Shop Drawings shall be provided for portions of the Work where interpretations or variations from the Contract Documents are proposed, or otherwise required.

B. Project Shop Drawings:

1. Project Shop Drawings shall show all changes to building details to coordinate with required modifications and indicate approval by other trades for required modifications to their work.
2. Where Shop Drawings are based on the use of a particular material, such material shall be submitted for review independently of the Shop Drawing.
3. When Shop Drawings are submitted in the form of brochures indicate all current variations from the information in effect at time documents were issued for bids.

C. Coordination Drawings: Comply with all requirements of Section 013100.

1.10 DELEGATED-DESIGN SUBMITTALS

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Architect thru the Construction Manager.

B. Shop Drawings: Submit shop drawings for each component of work identified, signed and sealed by the qualified professional engineer responsible for their preparation licensed in the State of Michigan.

C. Engineering Analysis: Submit comprehensive engineering analysis for each component of work identified, signed and sealed by the qualified professional engineer responsible for their preparation licensed in the State of Michigan.

1. Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads.

Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

- D. Product Data: Submit product data for each product and system specifically assigned to the Contractor to be designed or certified by a design professional, signed and sealed by the responsible design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads and other factors used to certify the product.
- E. Submittals: Shop drawings, engineering analysis, product data and other required submittals will be digitally signed and sealed and submitted electronically. The design professional's seal, license number, and signature shall be clear and legible and shall appear on each shop drawing sheet, each product data coversheet, and engineering analysis coversheet.

1.11 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall obtain, review, stamp with his approval and submit for review all Shop Drawings and Samples required by the Contract Documents. The Contractor shall be required to utilize the "Shop Drawing Transmittal Form attached to this section. Submittal materials for only one (1) specification section trade shall be submitted per each transmittal form. Do not combine submittals for multiple specification sections on one transmittal form. Use a separate transmittal form for each specification section.
- B. By approving and submitting Shop Drawings and Samples, the Contractor thereby represents that he has determined and verified all field measurements and field construction criteria at the site, and all materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing and Sample with the requirements of the work and of the Work and of the Contract Documents.
- C. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's, Construction Manager's, or the Architect's acceptance of Shop Drawings, Product Data or Samples, unless the Contractor has informed the Owner, Construction Manager and the Architect, in writing, of such deviation at the time of submission and the Architect has given written acceptance to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the acceptance thereof.
- D. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples to revisions other than those requested on previous submittals.
- E. No portion of the Work requiring submission of Shop Drawings, Product Data or Sample shall be commenced until the submittal has been accepted as provided herein. All such portions of the Work shall be in accordance with accepted submittals.

1.12 ARCHITECT'S REVIEW

- A. The Architect will complete review of Shop Drawings within fifteen (15) working days, and of Samples within twenty-one (21) working days of receipt thereof except that:
 - 1. Shorter time limits will be negotiated on a basis of need for each specific case for "fast track" or critical path items.

2. With respect to those areas with special architectural finishes and coordination of various material sources the parties shall agree upon a mutually satisfactory time schedule.
 3. Review time will be considered as starting when Drawings and Samples are substantially correct and so submitted.
 4. Incomplete or incorrect submittals will be returned without review, for proper submission.
- B. Shop Drawings, Samples and Product Data will be reviewed only for conformance with the design concept, compliance with the information given in the Contract Documents, arrangement and appearance. Deviations from the Contract Documents will be noted with comments and required corrections or changes will be noted on the returned submittal.
- C. Delegated Design Submittals will be reviewed only for conformance with the general design concept, compliance with performance and design criteria, and for loads transmitted to the building structure. Engineering analysis and calculations will not be reviewed and will be retained for record only. The Contractor is responsible for the design and performance of the delegated design systems and components. The review of a delegated design submittal shall not relieve the Contractor of the responsibility for proper and safe design.
- D. Contractor will be notified through the data management service when review is completed.
- E. Architect will retain electronic file of Product Data and A-E "mark-ups" or corrections of mark-ups.
- F. The Architect will **not** accept physical copies (hard copies) of shop drawings or product data submittals. Physical submittals will be accepted for Samples only. Physical Samples must be submitted through the Construction Manager and must be accompanied by an electronic (PDF) copy of the completed TMP Shop Drawing and Sample Transmittal Form.
- G. One sample from each set will be returned to the Contractor, one filed at the office of the Architect, one at the office of the Construction Manager or and one at the jobsite. If the Contractor intends that samples such as hardware or fixtures be installed on the project or returned at completion of the Project, he shall indicate at time of submittal, otherwise the Owner, Construction Manager and the Architect assume no responsibility for protection or return of such samples.

1.13 EQUIPMENT ROOM LAYOUT DRAWINGS

- A. The Contractor shall prepare and submit equipment room layout drawings as required by the technical specifications and additionally for areas where equipment proposed for use could present interface or space difficulties. Such drawings shall be prepared in the same manner as coordination drawings.

1.14 MATERIALS, EQUIPMENT AND FIXTURE LISTS

- A. Where required by the Technical Provisions, lists of materials, equipment and fixtures shall be submitted by the Contractor. The lists shall be supported by sufficient descriptive material, such as catalogs, cuts, diagrams, and other data published by the manufacturer, as well as

SECTION 013300
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evidence of compliance with safety and performance standards, to demonstrate conformance to the specification requirements; catalog numbers alone will not be acceptable.

- B. The data shall include the name and address of the nearest service and maintenance organization that regularly stocks repair parts. No consideration will be given to partial lists submitted from time to time.
- C. Materials, equipment and fixtures will not be approved for use at capacity ratings in excess of manufacturer's published data.
- D. Approval of materials and equipment will be tentative subject to submission of complete shop drawings indicating compliance with the Contract Documents.

**** END OF SECTION****

TMP SHOP DRAWING AND SAMPLE TRANSMITTAL FORM

CONTRACTOR/CONST. MANAGER:	PROJECT TITLE AND LOCATION:	DATE SUBMITTED: _____	NEW _____	SUB. NO. _____
<div style="border-bottom: 1px solid black; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black;"></div>	<div style="border-bottom: 1px solid black; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black;"></div>	CHECKER: _____	RESUB. _____	RESUB. NO. _____
		TMP PROJECT NO. _____		

SPEC SECTION NO.	NO. PRINT	NO. SEPL	NO. CAT.	NO. SAMPLES	SUBCONTRACTOR/MFR.	ITEM DESCRIPTION	*ACTION CODE	DATE CHECKED	DATE RETURNED	NO. COPIES

The undersigned certifies that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract documents except as otherwise noted. NOTE: Approval of items submitted does not relieve contractor from complying with all requirements of the contract documents.		* ACTION DEFINITION R = REVIEWED – NO EXCEPTIONS NOTED RN = REVIEWED WITH CORRECTIONS NOTED RR = REVISE AND SEND RECORD COPY X = NOT APPROVED – RESUBMIT NA = NO ACTION REQ'D
CONTRACTOR'S COMMENTS: ARCHITECT'S COMMENTS:	<div style="border-bottom: 1px solid black; margin-bottom: 10px;"></div> CONTRACTOR'S NAME <div style="border-bottom: 1px solid black; margin-bottom: 10px;"></div> SIGNATURE cc: Owner Consultant	

1.1 The following is a list of abbreviations utilized throughout the Contract Documents.

TMP 13174A
014213-1

SECTION 014213
ABBREVIATIONS

C.W.R. Condensing Water Return
C.W.S. Condensing Water Supply
COND. Condensate
COND. Conduit
CONF. Conference
CONN. Connect
C.A.V. Constant Air Volume
CONST. Construction
C.J. Control Joint
CONT. Continue/Continuous
CONTR. Contractor
C.P. Control Panel
CONV. Convector
CNVYR. Conveyor
COR. Corner
C.G. Corner Guard
CORR. Corridor/Corrugated
CPR. Copper
CNTR. Counter
CTSK. Countersink/
Countersunk
CRS. Course
COV. Cover
COV.PL. Cover Plate
C.C.T. Cubical Curtain Track
CU.FT. Cubic Feet/Cubic Foot

C.F.M. Cubic Feet Per Minute
C.Y. Cubic Yard
CULV. Culvert
C.D. Cup Dispenser
CYL. Cylinder
CYC. Cycles

D

DMPR. Damper
DMPFG. Dampproofing
D.L. Dead Load
DB. Decibel
D. Deep
DEG. Degree
DMT. Demountable
PARTN. Partition
DEPT. Department
DEPR. Depressed
DES. Design
DET. Detail
D.E.CO. Detroit Edison Co.
DIAG. Diagonal
DGM. Diagram
DIA. Diameter
DIFF. Diffuser
DIM. Dimension
D.R. Dining Room
DIR. Directory
D.D.C. Direct Digital Control
DISC. Disconnect

DISCONT. Discontinuous
DW. Dishwasher
DISP. Dispenser
DIST. Distance
D.P. Distribution Panel
DO. Ditto
DIV. Divider/Division
DR. Door
D.O. Door Opening
DR.OP. Door Operator
DBL. Double
D.A. Double Acting
D.H. Double Hung
DWL. Dowel
DN. Down
D.S. Downspout
D.S.B. Downspout Boot
DRN. Drain
D.T. Drain Tile
D.T.C. Drain Tile Connector
DWR. Drawer
DWG. Drawing
D.F. Drinking Fountain
D.B. Dry Bulb
D.S.P. Dry Stand Pipe
DBWTR. Dumbwaiter
DUP. Duplicate
D.DR. Dutch Door

E

EA. Each
E.F. Each Face
E.W. Each Way
E. East
ELAST. Elastomeric
FLASH. Flashing
ELAST W.P. Elastomeric Waterproofing
E.S.R. Elastomeric Sheet Roofing
E.D.H. Electric Duct Heater
ELEC. Electric/Electrical
ELEC. CL. Electric Closet
ELEC.CAB. Electrical Cabinet
E.C. Electrical Contractor
E- Electrical Drawing Number
E.P. Electrical Panel
E.R.P. Electric Radiant Panel
E.U.H. Electric Unit Heater
EWC Electric Water Cooler
E.W.H. Electric Water Heater
ELEC.OPER. Electrically Operated
EL. Elevation
ELEV. Elevator
EMERG. Emergency
ENCL. Enclosure
ENGR. Engineer

E/E End-to-End
E.A.T. Entering Air Temperature
ENTR. Entrance/Entry
EP. Epoxy
EQ. Equal
EQUIP. Equipment
EQUIV. Equivalent
ESC. Escalator
EST. Estimate
EXC. Excavated
EXH. Exhaust
E.D. Exhaust Duct
E.F. Exhaust Fan
E.G. Exhaust Grille
E.R. Exhaust Register
EXIST. Existing
EXP. Expansion
EXP.B. Expansion Bolt
E.J. Expansion Joint
EXPL.P. Explosion Proof
EXP'D. Exposed
EXT'N. Extension
EXT. Exterior
E.H. Extra Heavy
EXTR. Extruded
E.S.P. External Static Pressure

F

FAB. Fabricated/Fabric
F/F Face-to-face
F. FIN. Factory Finish
F.C.U. Fan Coil Unit
F.S. Far Side
FAS. Fastener
FDR. Feeder
FT. Feet/Foot
F.P.M. Feet Per Minute
FN. Fence
FBD. Fiberboard
FIG. Figure
FIN. Finish/Finished
FIN.FLR/ Finish Floor
F.F. F.F.
F.T.R. Finned Tube Radiation
F.A. Fire Alarm
F.A.C.P. Fire Alarm Control Panel
F. BRK. Fire Brick
F.D. Fire Damper
F.E. Fire Extinguisher
F.E.C. Fire Extinguisher Cabinet
F.H.C. Fire Hose Cabinet
F.H. Fire Hydrant
F.L. Fire Line
F.R. Fire Retardant/
Fire Rated

SECTION 014213
ABBREVIATIONS

F.V.C. Fire Valve Cabinet
FP. Fireplace
FPRFG. Fireproofing
FIXT. Fixture
FLG. Flange
FLASH. Flashing
F.H.M.S. Flat Head Machine
Screw
F.H.W.S. Flat Head Wood
Screw
F.C. Flexible Connection
FLR. Floor
F.CO. Floor Cleanout
F.D. Floor Drain
FLR.FIN. Floor Finish
FLUOR. Fluorescent
FLDG. Folding
FTG. Footing
FMBD. Formboard
FDN. Foundation
FR. Frame
FRMG. Framing
F.A.I. Fresh Air Intake
FRZR. Freezer
F.L.A. Full Load Amperes
F.S. Full Size
FURN. Furnish/ Furnished

G

GA. Gauge
GAL. Gallon
G.P.H. Gallons Per Hour
G.P.M. Gallons Per Minute
GALV. Galvanized
GALV.I. Galvanized Iron
G. Gas
GKT. Gasket
G.V. & B. Gate Valve And Box
GA. Gauge
GEN'L. General
GL. Glass
GLZ. Glazing
G.H.T. Glazed Hollow Tile
G.B. Grab Bar
GR. Grade/Grille
GB. Grade Beam
GRAT. Grating
G.L. Grid Line
GRN. Granite
G.S. Grease Separator
G.T. Grease Trap
GND. Ground
G.F. Ground Fault
GT. Grout
GYP. Gypsum
GYP.BD. Gypsum Board

H

HNDCP. Handicapped

H.R. Handrail
H.BD. Hardboard
HDWE. Hardware
HDWD. Hardwood
HD. Head
HDR. Header
H.O.A. Hands-Off-Auto
HD. Head
H.A.GL. Heat Absorbing
Glass
H.R.U. Heat Recovery Unit
HTR. Heater
HTG. Heating
H/V. Heating And
Ventilating
H.V.A.C. Heating, Ventilating,
and Air Conditioning
H.H.W.R. Heating Hot Water
Return
H.H.W.S. Heating Hot Water
Supply
HGT. Height
HEX. Hexagon
H. High
H.I.D. High Intensity
Discharge
H.P. High Point
H.PR. High Pressure
H.S. High Strength
H.S.B. High Strength Bolt
H.V. High Voltage
HWY. Highway
HSTWY. Hoistway
H.C. Hollow Core
H.M. Hollow Metal
HK. Hook
HORIZ. Horizontal/
Horizontally
HP. Horsepower
H.B. Hose Bibb
H.S.P. Hose Stand Pipe
H.V.C. Hose Valve Cabinet
HOSP. Hospital
H.W. Hot Water
H.W.R. Hot Water Return
H.W.S. Hot Water Supply
HR. Hour
H.O. Hub Outlet
HYD. Hydrant/Hydraulic
H. Hydrogen

I

I.D. Identification
INCAND. Incandescent
IN. or " Inch/ Inches
INCIN. Incinerator
INCL. Include/ Including
I.W. Indirect Waste
INFO. Information
I.D. Inside Diameter

I.F. Inside Face
INST'L. Install/ Installation
INSUL. Insulate/ Insulation
I.H. Intake Hood
INT. Interior
INTER. Intermediate
INV. Invert
I.E. Invert Elevation

J

J.C. Janitor Closet
JT. Joint
JST. Joist
J.B. Junction Box
JR. Junior

K

K.P. Kick Plate
KV. Kilovolt
KV.A. Kilovolt Ampere
KW. Kilowatt
K. Kip (1000#)
KIT. Kitchen
K.D. Knock Down
K.O.P. Knock-Out Panel

L

LBL. Label
LAB. Laboratory
LAD. Ladder
L.B. Lag Bolt
LAM. Laminate/ Laminated
LDG. Landing
L- Landscape Drawing
Number
LGE. Large
LDRY. Laundry
LAV. Lavatory
L.A.T. Leaving Air
Temperature
L.H. Left Hand
L.H.R.B. Left Hand Reverse
Bevel
LGTH. Length
LEV. Level
LIB. Library
LT. Light
LPRF. Lightproof
LTG. Lighting
L.P. Lighting Panel
L.R.P. Lighting Receptacle
Panel
LTWT. Lightweight

SECTION 014213
ABBREVIATIONS

LTWT. Lightweight Concrete
CONC.
LMS. Limestone
LTL. Lintel
L.D. Linear Diffuser
L.C.D. Linear Ceiling
Diffuser
L.F. Linear Feet/Foot
LIQ. Liquid
L.L. Live Load
L.R. Living Room
LOC. Location
LKR. Locker
LG. Long
L.L.H. Long Leg Horizontal
L.L.V. Long Leg Vertical
LVR. Louver
L.O. Louver Opening
L.P. Low Point
L.PR. Low Pressure
LBR. Lumber
LBS. Pounds

M

MACH. Machine
M.B. Machine Bolt
MACH.RM. Machine Room
M.U.A. Make-Up Air
M.A.U. Make-up Air Unit
M.D.P. Main Distribution
Panel
M.S.B. Main Switch Board
MAINT. Maintenance
MH. Manhole
M.V.D. Manual Volume
Damper
MFR. Manufacturer
MAR. Marble
MK. Mark
MAS. Masonry
M.O. Masonry Opening
MATL. Material
MAX. Maximum
MECH. Mechanical
M- Mechanical Drawing
Number
M.C. Medicine Cabinet
MED. Medium
MEMB. Membrane
MET. Metal/ Metallic
M.C.S. Metal Carpet Strip
M.D.S. Metal Divider Strip
M.E.S. Metal Edge Strip
M.L. Metal Lath
M.L.& Metal Lath And
PLAS. Plaster
MET.W.P. Metallic
Waterproofing
MEZZ. Mezzanine

M.D.O.T. Michigan Department
of Transportation
MWK. Millwork
MIN. Minimum
MIR. Mirror
M. & S. Mirror And Shelf
MISC. Miscellaneous
M.I. Miscellaneous Iron
MOD. Model
MON. Monument
M.S. & S. Mop Strip And Shelf
M.O. Motor Operated
M.O.D. Motor Operated
Damper
MLDG. Molding
MTD. Mounted
MTG. Meeting/Mounting
MTD. Mounted
MOV. Moveable
MOV. Moveable Partition
PARTN.
MULL. Mullion
M Thousand
MBH 1000BTU/Hour

N

NAT. Natural
N.S. Near Side
NK. Neck
NEUT. Neutral
N.R.C. Noise Reduction
Coefficient
NOM. Nominal
N.C. Non-Corrosive
NOR. Normal
N.C. Normally Closed
N.O. Normally Open
N North
NOS. Nosing
N.I.C. Not In Contract
N.T.S. Not To Scale
NO. or # Number

O

OBS. Obscure
OBS.GL. Obscure Glass
OFF. Office
O.C. On Center
OPQ. Opaque
OPG. Opening
OPER. Operator
O.B.V.D. Opposed Blade
Volume Damper
OPP. Opposite
OPP.HD Opposite Hand
ORIG. Original
ORN. Ornamental

OZ. Ounce
O/O Out-to-Out
O.A. Outside Air
O.D. Outside Diameter
O.F. Outside Face
O.H.S. Oval Head Screw
OA. Overall
OHD. Overhead
OHD.DR. Overhead Door
OXY. Oxygen

P

PRD. Painted
PR. Pair
PNL. Panel
P.T.D. Paper Towel
Dispenser
P.T.W.R. Paper Towel Waste
Receptacle
PARA. Paragraph
PRL. Parallel
PGK. Parking
P.BD. Particle Board
PRTN. Partition
PASS. Passage
PAT. Patent
PVM.T. Pavement
PVG. Paving
PED. Pedestal
PERF. Perforated
PERIM. Perimeter
PERM. Permanent
PERP. Perpendicular
PHOTO. Photograph
P.H. Physically
Handicapped
PC. Piece
PCS. Pieces
PLAS. Plaster
PL.LAM. Plastic Laminate
PL. Plate
PL.GL. Plate Glass
PLAT. Platform
PLBG. Plumbing
PLYWD. Plywood
PT. Point
P.T. Point of Tangency
P.C. Point of Curvature
POL. Polish/ Polished
PVC. Polyvinylchloride
PORC. Porcelain
PORC. Porcelain Enamel
ENAM.
POR. Porous
PORT. Portable
POS. Position
P.I.V. Post Indicator Valve
LBS. or # Pounds
P.L.F. Pounds Per Linear
Foot

SECTION 014213 ABBREVIATIONS

P.S.F.	Pounds Per Square Foot	R.H.	Relief Hood	SGL.	Single
P.S.I.	Pounds Per Square Inch	REM.	Remove/ Removable	SK.	Sink
P.C.F.	Pounds Per Cubic Foot	REP.	Repair	S.D.	Soap Dispenser
P.P.	Power Panel	REQ'D.	Required	S.C.	Solid Core
P/C	Precast	RESIL.	Resilient	S.T.C.	Sound Transmission Class
P.T.C.	Precast Terrazzo Receptor	RET.	Return	S	South
PREFAB.	Prefabricated	R.A.	Return Air	SP.	Space
PFN.	Prefinished	R.A.D.	Return Air Duct	SPR.	Spare
P.C.T./C.M.	Pressure Control Terminal/Control Module	R.A.F.	Return Air Fan	SPKR.	Speaker
P.G.	Pressure Gauge	REV.	Revised/Revision	SPEC.	Specifications
P.R.G.	Pressure Relief Grille	R.P.M.	Revolutions Per Minute	S.D.	Splitter Damper
P.R.V.	Pressure Reducing Valve	R.	Riser	SPRYD.	Sprayed
PRIM.	Primary	R.H.	Right Hand	SPKLR.	Sprinkler
PROJ.	Project/ Projection	R.H.R.B.	Right Hand Reverse Bevel	SQ.	Square
PROP.	Property/ Proposed	R.O.W.	Right Of Way	S.F.	Square Feet/ Square Foot
P.L.	Property Line	RVT.	Rivet	STAG.	Staggered
P.A.	Public Address	RD.	Road	ST.STL	Stainless Steel
P.S.	Purse Shelf	R.S.C.	Rolling Steel Curtain	STD.	Standard
P.B.	Push Button	RF.	Roof	SP.	Standpipe
		R.C.	Roof Conductor	S.P.	Static Pressure
		R.D.	Roof Drain	STA.	Station
		RF.H.	Roof Hatch	STM.	Steam
		R.T.U.	Roof Top Unit	STL.	Steel
		R.S.	Roof Sump	STL.PL.	Steel Plate
		R.V.	Roof Ventilator	STIFF.	Stiffener
		RFG.	Roofing	STO.FR.	Storefront
	Q	R.W.C.	Rain Water Conductor	STOR.	Storage
		RM.	Room	ST.	Storm
QTY.	Quantity	R.O.	Rough Opening	STR.	Straight
Q.T.	Quarry Tile	RND. or O	Round	ST.	Street
QTR.	Quarter	R.H.M.S.	Round Head Machine Screw	STRUCT.	Structural Drawing Number
QTR.RD.	Quarter Round	R.H.W.S.	Round Head Wood Screw	S.G.F.T.	Structural Glazed Facing Tile
	R	R.T.	Rubber Tile	S.STL.	Structural Steel
				SS.D.	Subsoil Drain
				SS.D.C.	Subsoil Drain Connection
RBT.	Rabbet		S	SUB.	Substation
R.C.P.	Radiant Ceiling Panel			S.A.G.	Supply Air Grille
RAD. or R.	Radius			S.D.	Supply Diffuser/ Duct
R.W.C.	Rain Water Conductor	SAN.	Sanitary	SUBST.	Substitute
R.R.	Railroad	S.N.D.	Sanitary Napkin Dispenser	S.A.R.	Supply Air Register
RECV.	Receive/ Receiving	S.N.R.	Sanitary Napkin Receptacle	S.F.	Supply Fan
RECPT.	Receptacle			S.A.	Supply Air
R.P.	Receptacle Panel	SCHED.	Schedule	S.A.D.	Supply Air Diffuser
REC.	Recess	SCN.	Screen	SUPP.	Support
RECIRC.	Recirculation	STG.	Seating	SURF.	Surface/Surfacing
RECT.	Rectangle / Rectangular	SECT.	Section	SUSP.	Suspend/Suspension
RED.	Reducer	SERV.	Service	SW.	Switch
RWD.	Redwood	SHT.	Service Sink	SWBD.	Switchboard
REF.	Refer/Reference	SHTHG.	Sheet	SWGR.	Switchgear
REFL.	Reflected/Reflective	SHT.MET.	Sheet Metal	SYM.	Symbol/Symmetrical
REFRIG.	Refrigerant	SH. & P.	Shelf And Pole	SYS.	System
REFR.	Refrigerator	SHWR.	Shower		T
REG.	Register	S.C.R.	Shower Curtain Rod		
RH.C.	Reheat Coil	S.D.R.	Shower Door	T.BD.	Tackboard
REINF.	Reinforce/Reinforcing Reinforcement	SW.	Sidewalk	TAN.	Tangent
		SIM.	Similar	TECH.	Technical

SECTION 014213
ABBREVIATIONS

TEL.	Telephone	U.O.N.	Unless Otherwise	W	West
TEL.CAB.	Telephone Cabinet		Noted	W.B.	Wet Bulb
TV	Television	U.S.A.	Untempered Supply	W.	Wide/Width
TV.M.	Television Monitor		Air	W-x-	Wide Flange Section
TEMP.	Temperature	UR.	Urinal	WT	Wide Flange Tee
TEMP.GL.	Tempered Glass				Section
T.W.	Tempered Water			W.O.	Window Opening
T.U.	Terminal Unit		V	W.GL.	Wire Glass
TERR.	Terrazzo			W.M.	Wire Mesh
T.B.	Test Boring			W/	With
T.	Thermostat	VAC.	Vacuum	W/O	Without
THK.	Thick/Thickness	V.B.	Vacuum Breaker	WD.	Wood
T.S.	Thickened Slab	V.C.O.	Vacuum Cleaner	W.L.	Working Line
M (1000)	Thousand		Outlet	W.PT.	Working Point
K (KIP)	Thousand Pounds	V.BARR.	Vapor Barrier	W.I.	Wrought Iron
THD.	Thread/Threaded	VAR.	Variable		
THRESH.	Threshold	V.A.V.	Variable Air Volume		
THRU.	Through	VARN.	Varnish		Y
T.	Tile	VNR	Veneer		
T./TOIL.	Toilet	V. PLAS.	Veneer Plaster		
T.P.D.	Toilet Paper	V.	Vent	YD.	Yard
	Dispenser	V.T.R	Vent Thru Roof	Y.P.	Yield Point
T.P.H.	Toilet Paper Holder	VENT.	Ventilate/ Ventilation	Y.S.	Yield Strength
T & G	Tongue And Groove	V.I.F.	Verify In Field	YR.	Year
T & B	Top & Bottom	VS.	Versus		
T/C	Top Of Cover/Curb	VERT.	Vertical/Vertically		Z
T/EL.	Top Elevation	VERT.C.	Vertical Curve		
T/F	Top Of Footing	VEST.	Vestibule		
T/M	Top Of Masonry	V.I.	Vibration Isolator		
T/P	To Of Pavement	VNY.	Vinyl	Z.C.	Zinc-Coated
T/R	Top of Rail	V.C.T.	Vinyl Composition		
T/R	Top of Rim		Tile		
T/S	Top of Steel	VIN.FAB.	Vinyl Fabric		
T/W	Top of Wall	V.R.S.	Vinyl Reducer Strip		
T.B.	Towel Bar	VIT.	Vitreous		
T.D.	Towel Dispenser	V.C.P.	Vitrified Clay Pipe		
T.D. & W.R.	Towel Dispenser &	VOL.	Volume		
	Waste Receptacle	V.D.	Volume Damper		
T.G.	Transfer Grille	V	Volts		
TRFR.	Transformer				
TRAN.	Transom				
T	Tread				
T.D.	Trench Drain		W		
T.S.	Tube Section				
T.V.	Turning Vane				
T.T.	Twin Tee				
TYP.	Typical				
	U				
U.C.	Undercut	WAINS.	Wainscot		
U.G.	Underground	W.CAB.	Wall Cabinet		
U.L.	Underwriters'	W.CO.	Wall Cleanout		
	Laboratories, Inc.	W.H.	Wall Hydrant		
ULT.	Ultimate	W/W	Wall-to-wall		
UNFIN.	Unfinished	W.V.	Wall Vent		
U.H.	Unit Heater	WHSE.	Warehouse		
U.SUB.	Unit Substation	W.F.	Wash Fountain		
U.V.	Unit Ventilator	W.	Waste/Watts		
U.S.G.S.	United States	W & V	Waste And Vent		
	Geological Survey	W.R.	Waste Receptacle		
		W.C.	Water Closet		
		W.G.	Water Gauge		
		W.H.	Water Heater		
		WP.	Waterproofing		
		W.P.	Weatherproof		
		W.STPG.	Weatherstripping		
		WT.	Weight		
		W.W.F	Welded Wire Fabric		

STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: Standards and Definitions
Definitions
Specification Content
Quality Standard of the Industry

1.2 DEFINITIONS

- A. Certain terms used in the Contract Documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to extent not stated more explicitly in another provision of the Contract Documents.
- B. Indicated: A cross-reference to details, notes or schedules on the drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- C. Furnish: Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- D. Install: Perform operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning and similar operations, as applicable in each instance.
- E. Provide: Furnish and install, complete and ready for intended use, as applicable in each instance.
- F. Installer: The entity (person or firm) engaged by the Contractor or its subcontractor or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.

1.3 FORMAT AND SPECIFICATION EXPLANATIONS

- A. Specification Production: None of these explanations will be interpreted to modify substance of requirements. Portions of these Specifications have been produced by Architect's/Engineer's standard methods of editing master Specifications, and may contain minor deviations from traditional writing formats. Such deviations are a normal result of this production technique, and no other meaning will be implied or permitted.
- B. Format Explanation: The format of principal portions of these Specifications can be described as follows; although other portions may not fully comply and no particular significance will be attached to such compliance or non-compliance:

1. Sections and Divisions: For convenience, basic unit of Specification text is a "section", each unit of which is named and numbered. These are organized into related families of sections, and various families of sections are organized into "divisions", which are recognized as the present industry-consensus on uniform organization and sequencing of Specifications. The section title is not intended to limit meaning or content of section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.
2. Each section of specifications has been subdivided into 3 (or less) "parts" for uniformity and convenience (Part 1 - General, Part 2 - Products, and Part 3 - Execution). These do not limit the meaning of and are not an integral part of text which specifies requirements.
3. Imperative Language: Requirements expressed imperatively shall be performed by Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by Contractor, or when so noted, by others.
4. Section Numbering: Used to facilitate cross-reference in Contract Documents. Sections are placed in Project Manual in numeric sequence; however, numbering sequence is not complete, and listing of sections at beginning of project Manual must be consulted to determine numbers and names of specification sections in the Contract Documents.
5. Page Numbering: Numbered independently for each section; recorded in listing of sections (Index or Table of Contents) in Project Manual. Section number is shown with page number at bottom of each page, to facilitate location of text in Project Manual.

1.4 SPECIFICATION CONTENT

- A. Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic-descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit or work.
- B. Overlapping and Conflicting Requirements: Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping of these different standards or requirements establishes different or conflicting minimums of levels of quality, most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into the Contract Documents (not by way of reference to an industry standard) clearly indicated that a less stringent requirement is to be fulfilled. Refer apparently equal but different requirements, and uncertainties as to which level of quality is more stringent, to Architect for a decision before proceeding.
 1. Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether specifically indicated as such.
- C. Specified Quality Standards: The fact that a specified product or model number is in conflict with specified quality requirements such as "concealed fasteners" or "special colors" such specification shall be construed to mean that acceptance is contingent upon manufacturer or fabricator modifying the product to comply with the Specifications.

- D. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or a appropriate for context of requirements. Refer instances of uncertainty to Architect for decision before proceeding.
- E. Specialists; Assignments: In certain instances, specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work. These must be recognized as special requirements over which Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application of regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment or entire set of requirements remains with Contractor.
- F. Abbreviations: The language or Specifications and other Contract Documents is of the abbreviated type in certain instances, and implies word and meanings which will be appropriately interpreted. Actual work abbreviations of a self-explanatory nature have been included in the text. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of Specification requirements with notations on drawings and in schedules. These are frequently defined in sections at first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the Contract Documents so indicates.

1.5 QUALITY STANDARDS OF THE INDUSTRY

- A. General Applicability of Standards: Applicable standards of construction industry have same force and effect (and are made a part of Contract Documents by reference) as if copied directly into Contract Documents, or as if published copies were bound herewith.
 - 1. Reference standards (referenced directly in Contract Documents or by governing regulations) have precedence over non-referenced standards.
 - 2. Non-referenced standards have no particular applicability except as a measure of compliance with standards recognized in construction industry.
- B. Copies of Standards:
 - 1. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.
 - 2. The Architect reserves the right to reasonably require the Contractor to submit, or maintain at the jobsite, copies of all applicable standards as needed for enforcement of the requirements.
- C. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.
- D. Abbreviations and Names: Acronyms or abbreviations used in Contract Documents mean the industry recognized name applicable to context of text provision.

1.6 DRAWINGS, DETAILS, SCHEDULES

- A. Large scale details are provided to show arrangement, attachment, and otherwise indicate relationships of component materials and for purposes of clarify often do not show all materials. The fact that a material is, or is not indicated on such details shall not act to relieve the Contractor of responsibility for providing a specified item.
- B. Schedules are provided for convenience of reference only. In the event of an omission or conflict between schedules and other documents, the more restrictive document shall govern as directed by the Architect.

1.7 CODES AND STANDARDS

- A. Comply with latest revisions to date of all Governing Codes and with all other legal provisions relating to the Work. Other standards and references shall be current edition as of date of issue of Bidding Documents.
- B. Conform to all laws, ordinances and regulations affecting the erection, sequence of erection, and completion of the whole or any part of the work; and conform to the requirements of the Owner and of public authorities having lawful or customary jurisdiction.
- C. These requirements shall take precedence over the Contract Documents except where the Contract Documents require higher standards also acceptable to the authorities.

1.8 PERMITS, CODES, ORDINANCES AND NOTICES

- A. See General Conditions for permits.
- B. Obtain and keep available at the job, copy of building ordinances pertinent to the work.
- C. Inform the Owner and the Architect, in writing, of the manner and time in which each of the requirements of the General Conditions concerning permits are complied with.
- D. Make all necessary arrangements and obtain permits for blockage of streets and for all interference with the public right of way.
- E. Special Inspections: All special inspections required to be made under provisions by building code of utility company regulations shall be arranged and paid for by the Contractor whose work requires such inspection.

****END OF SECTION****

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. DRAWINGS AND GENERAL PROVISIONS of Contract, including General and Supplementary Conditions and other Division 01 Specification sections, apply to work of this section.

1.2 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if presented to the Architect at least 10 days in advance of bid due date.
 - 1. Identify the product, or the fabrication to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
 - e. A Statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including all related costs under this Contract and excluding Architect's redesign costs, net change, if any, in the Contract Sum, and waiving all claims for additional costs related to the substitution which subsequently became apparent.
 - g. Certification by the Contractor that the substitution proposed is appropriate in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
- B. Product Presentation: Conduct a presentation at the Architect's office if required by the Architect to prove appropriateness to the specified product.
- C. Architect's Action: Within one (1) week of receipt of Bids, the Architect may request additional information or documentation necessary for evaluation of the request. Within two (2) weeks of receipt of the request, or one (1) week of receipt of the additional information or documentation, whichever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute is not made or obtained within the time allocated, use the product specified by name. If acceptance is made prior to award, it will be included in the Contract Amount. If acceptance is made after Award, it will be in the form of a Change Order.

1.3 GENERAL REQUIREMENTS FOR SUBSTITUTIONS

A. Substitutions During Bidding:

1. Substitutions shall be included in the proposal under the following conditions only and shall follow all requirements of "Acceptance of Substitutions."
 - a. When the Contractor is unable to obtain competitive prices from more than one of the specified manufacturers.
 - b. When the Contractor knows of another product of equal or better quality and performance.
 - c. When the Contractor has had unsatisfactory experience with one or more of the specified products or has reason to believe that the specified Manufacturer will not provide the necessary guarantees or assume responsibility for performance.

B. Substitutions After Contract:

1. Substitutions proposed after Award of the contract will only be considered for the following reasons.
2. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

C. Acceptance of Substitutions:

1. Substitutions will be considered for any manufacturer except those followed by the words "No Substitutions" in the Specifications.
2. In all cases where substitutions are proposed by the Contractor, it shall be the sole responsibility of the Contractor to provide adequate data and samples as required by the Architect to evaluate the substitution.
3. The Architect shall not be obliged to justify his reason for rejecting a proposed substitution.
4. In the event that a substitution is accepted conditionally on the Contractor's agreement to assume full responsibility for equality and performance, the Contract shall provide a full value warranty and agree to make good all damages resulting from the failure of the substitute product.

1.4 ACCEPTANCE OF MATERIALS AND MANUFACTURERS

A. Standard Materials:

1. Architect's acceptance applies to the Manufacturer only and shall not act to permit any deviation from other requirements of the Specifications.
2. Acceptance will be based on the Manufacturer's specifications at time of issuance of Bidding Documents. Deviations from such specifications shall be considered as a substitution.

3. Requests for acceptance shall be in tabular form stating Specification paragraph and material selected, except as otherwise provided.
 4. Shop Drawings shall not indicate any material for which acceptance has not been received, unless accompanied by a separate request for approval. In no case shall Architect's review and return of Shop Drawings constitute and acceptance of either specified or substitute manufacturers or materials.
- B. Materials Involving Supplementary Warranty of Maintenance Contract:
1. These materials shall be submitted as a request for acceptance over the signature of a qualified technical representative in the direct employ of the Manufacturer of such other person as the manufacturer may authorize in writing. Request for acceptance shall contain the following information.
 - a. Name of project.
 - b. Name of Contractor, Subcontractor or other party to whom material is furnished.
 - c. Reference to Specification Section and Article where material is specified and other Contract Documents necessary for identification.
 - d. Statement of acceptance of documents, conditions, and performance requirements:
 - 1) Statement that documents as issued are in accordance with manufacturer's recommendations for use of specified materials, or
 - 2) Recommended modification of detail, use, application or for substitution of different product by same manufacturer as being more suitable for the performance requirements of the warranty.
 - e. Statement that detailed installation instructions will be provided.
 - f. Extent of job site technical services, consultants or instructors proposed, if any.
 - g. Statement that warranty will be provided.
 - h. Special provisions required to keep warranty in force.
 2. Requests for acceptance may be in the form of a letter including the above items and addressed to the subcontractor responsible for installation of the material, or may be according to a sample form of Material Proposal, provided by the Architect.
 3. Upon receipt of the manufacturer's proposal, the subcontractor shall add his own statement agreeing to comply with the manufacturer's requirements and warranting his own workmanship.
 4. The Contractor shall submit letter of endorsement of copies of all documents, including letters of comment, to the Architect for approval. In the event that the request for approval recommends a change in the work, modification of detail, or substitution of material, the Contractor shall indicate his concurrence with the change as being within the scope of the Contract or indicate the change in the Contract Sum for making such change, or state his objections to the change.

****END OF SECTION****

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: General Requirements for standards of construction operations and procedures of a repetitive or general nature.

1.2 MANUFACTURER'S REVIEW

- A. Manufacturer's review of documents and conditions of use is a statement by the manufacturer or a representative or agent thereof that it has reviewed the documents pertaining to the work and verified the proposed use of the material including details and instructions for applications or installation, is suitable for the intended purpose, and under similar conditions of use.
- B. Obtain and submit a statement from the manufacturer indicating that they have no objection to the proposed details or method of installation, and that instructions for applications or installation are in conformance with manufacturer's recommendations. Statement shall include any additional precautions or protective measures which should be taken.
- C. Manufacturer's review shall recognize adjacent materials and state if there is, in its opinion, a serious question of compatibility including possibility of damage to other materials, or damage to the material or assembly by other materials. Such conditions shall be reconsidered and adjustments made, previous approvals notwithstanding.

1.3 APPROVED APPLICATOR

- A. An approved applicator or installer is one whom the manufacturer has reason to believe is experienced and qualified in the work and is familiar with the product and with the manufacturer's recommendations for use and installation.
- B. Obtain and submit a statement from the manufacturer that the proposed applicator or installer is approved and indicate whether or not this approval is subject to review and observation of the work by the manufacturer's representative.
- C. Manufacturer shall not approve an installer or applicator if, because of past history of performance or other reasons, there is a reasonable doubt that it can be relied upon to perform in accordance with the Contract Documents.
- D. Upon completion of the work, manufacturer shall certify that approved material in the proper quantities have been delivered to the approved applicator for use on the Project.
- E. In the event that manufacturer declines to approve proposed applicator, submit a statement as to whether or not on-site instruction or manufacturer's supervision is recommended.

1.4 MATERIAL HANDLING, STORAGE AND DELIVERY

- A. Where applicable, deliver all packaged materials to the site in manufacturer's original unopened containers.

- B. Properly pack all materials in appropriate containers for shipment. Identify contents with piece marks referenced to shop drawings and as far as possible in some sequence as erection. Provide packing, wrapping and other protection as required to insure satisfactory condition of materials and finishes at time of erection.
- C. Inspection and acceptance will be made on the basis of materials as delivered to the job site.
- D. Provide adequate quantities to allow for damage and breakage during shipment and delivery and for replacement of all materials damaged prior to final acceptance. All such replacement of damaged materials shall be at no additional cost to the Owner.
- E. Store materials and equipment which are subject to degradation by outside exposure in a weathertight enclosure.

1.5 MIXING, THINNING AND STORAGE

- A. Store and mix paints only in areas designated, and provide proper protection for walls and floors.
- B. Mix and thin paints in strict accordance with recommendations of the manufacturer.
- C. Deliver and store paints and flammable materials in the manufacturer's original unopened containers, as far as practicable. Keep partially used materials in tightly closed containers.
- D. Do not store oil or paint soaked rags inside the building. Do not store materials in any room containing a direct fired heating unit.

1.6 ON SITE INSTRUCTION

- A. On-site instruction shall consist of inspection and instruction performed by a qualified representative of the manufacturer.
- B. Obtain and submit a statement from the manufacturer that its authorized representative will provide the specified inspection and instruction and submit a record of the date on which specified services were provided.
- C. Service shall consist of:
 - 1. Preliminary inspection of substrates and all other conditions which would affect the performance of the work.
 - 2. Give notice of all unacceptable conditions and recommend remedial action.
 - 3. Recommend proper procedures for conditions as encountered at the site.
 - 4. Verify that workers are qualified and have received proper instructions.

1.7 MANUFACTURER'S SUPERVISION

- A. Manufacturer's supervision, in addition to all services specified for on- site instruction, consists of continuing inspection and verification that the work has been performed in accordance with the Contract.
- B. Obtain and submit a statement from the manufacturer that complete supervision will be provided.

- C. Where supervision is specified, all costs shall be included in the Base Bid. Where supervision is recommended as a modification, submit a proposal indicating the extent and additional cost, if any, of such service.
- D. Upon completion submit a report giving dates of inspections and include pertinent information as applicable to the particular trade such as procedures, coats, coverages, tests as necessary to verify conformance and certify that the proper types and quantities of materials were installed.

1.8 WORKMANSHIP

- A. Employ skilled mechanics and fabricate all work in the best and most workman-like manner and in strict accordance with the detail drawings, by fabricating contractors regularly engaged in the particular type or work.
- B. Conform to the acceptable fabrication and erection standards of the manufacturer and to the applicable rulings of Code Authorities.

1.9 FABRICATION

- A. Fabricate and install all items plumb, true, straight, square, level and in proper elevations, plane, locations and alignment with other work. Design all work for adjustment to field connection, fitted with proper joints and intersections, adequately anchored in place. Complete work in every detail.
- B. Design and anchor work so that work will not be distorted not fasteners overstressed from expansion and contraction due to temperature change.
- C. All fasteners for exposed surface where not otherwise indicated shall be concealed.
- D. Fabricated Items:
 - 1. Model numbers of Manufacturers as listed herein are intended to indicate design and detail for each item. Variations affecting function or appearance will not be accepted.
 - 2. Identifying Markings: Where the manufacturer's name, patent number, model number or similar identifying marks are required, locate such markings in as inconspicuous as possible location. In no case will such marks be acceptable as part of the basic design.
 - 3. Hardware for all Units: Concealed fasteners and hardware. Butt hinges are not acceptable as a substitute where item scheduled in Specification is manufactured with concealed pivots or piano hinges.

1.10 INSTALLATION

- A. Accurately locate, carefully plumb and level, and securely attach all accessories.
- B. Provide concealed grounds and backing or other anchorages devices, properly located, as required for fastening.
- C. Use manufacturer's standard mounting devices as best suited to installation conditions and as accepted by the Architect. Make all attachments by positive mechanical fastening devices, except where other installation methods are indicated.

- D. Where so recommended by the manufacturer, install the work under direct supervision of the authorized representative of the manufacturer. Employ workers experienced and qualified in the trade.
- E. Install units true and plumb in the opening maintaining proper contact with frames or adjacent materials and fitting closely to detail at intersection with other materials to provide for proper operation.
- F. Connect and properly adjust all operating devices and equipment to operate smoothly and perfectly.
- G. Upon completion or when directed, conduct careful inspection and correct defective work. Perform necessary adjustments as required to leave the completed installation in efficiently operable condition.

1.11 PREPARATION OF SURFACES FOR COATINGS AND COVERINGS

- A. Inspect all surfaces and verify that all required cants and chamfers are provided, and that all surfaces are free from irregularities of projections which would interfere with proper application.
- B. Thoroughly clean surfaces; remove all loose materials, grease, oil and foreign matter.
- C. Allow surfaces to completely dry before applying materials.
- D. Report all unsatisfactory surface to contractor for correction before proceeding. Otherwise proceeding will constitute acceptance of surface by Contractor.
- E. Note: Interior application of solvent type adhesives and systems require special ventilation or special solvents if ventilation is not possible.

1.12 BUILDING-IN, ANCHORS, INSERTS

- A. Unless otherwise stipulated, each trade generally shall promptly furnish anchorage and insert devices, together with adequate setting information, where necessary for building into the work by other trades.
- B. Verify the accuracy of all built-in anchors and inserts.
- C. Delays and errors shall be corrected by the trade responsible therefor.
- D. Power driven anchors of equivalent capacity and function may be accepted, subject to written acceptance, where approved by local jurisdictional authorities.
- E. Do not endanger or alter the work of any other trade without obtaining prior written consent.
- F. Furnish all supports necessary for proper installation of equipment.

****END OF SECTION****

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Division 02 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 2. Divisions 02 through 35 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 22, 23 and 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

- A. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related elements:
 - a. Primary operational systems and equipment.
 - b. Fire-protection systems.
 - c. Communication systems.
 - d. Electrical wiring systems.
 - e. Operating systems of special construction in Division 13 Sections.
- B. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 1. Membranes and flashings.
 2. Exterior curtain-wall construction.
 3. Equipment supports.
 4. Piping, ductwork, vessels, and equipment.
 5. Noise- and vibration-control elements and systems.
- C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- D. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.
 1. Existing Roof: The existing roof is a roof system which is still under warranty. Comply with the requirements stated in the "Quality Assurance" paragraph above.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size

required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

****END OF SECTION****

WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: Warranties and continuing services required to be provided by manufacturers of materials and systems where required for proper performance.
- B. The word "Guarantee" when appearing in any Contract Document or construction correspondence shall be defined as warranty in accordance with Article 9.4 of the General Conditions.

1.2 SUBMITTALS

- A. Submit warranties in accordance with Article 9.4 of the General Conditions as modified by Supplementary Conditions and additional requirements specified under the individual Trade Sections.
- B. Required types of warranties and additional services are scheduled and listed in the Trade Sections.
- C. In all cases where "Special Warranties" or "Service Contracts" are required, the request for approval of materials will be accepted by the Owner and the Architect on the understanding that manufacturer agrees to provide the specified warranty or other service unless stated otherwise in the request.
- D. The Owner will not be bound to accept any limitations or variations from the specified warranty which were not filed with the request for acceptance and accepted prior to purchase of materials.
- E. Warranties shall be submitted prior to request for payment for 100% completion in each case, shall acknowledge the responsibilities defined under Supplementary Conditions and shall include:
 - 1. Manufacturer's warranty that all materials comply with its published standards, comply with the requirements of the Specifications and where specified, are adequate for the proposed use.
 - 2. Subcontractor's warranty that all workmanship complies with the requirements of the Specifications and of the manufacturer
 - 3. Contractor's warranty covering the entire work and accepting responsibility for all limitations imposed by the manufacturer or sub- contractor except where such limitations have been previously accepted by the Architect.
 - 4. Certification and verification of previously submitted information including statement of all limitations, required maintenance and similar conditions of the warranty.

1.3 STANDARD WARRANTIES

- A. A standard warranty is a warranty whose terms are essentially the same as normally offered by the manufacturer of standard with the industry.

- B. General Conditions require that standard warranties apply as a minimum requirement notwithstanding the fact that submittal of a copy of the warranty is not required.
- C. Unless otherwise specified a standard warranty shall be for a period on one (1) year from Date of Substantial Completion.
- D. Contractor shall obtain and furnish to the Owner from each manufacturer of materials or equipment incorporated into the Work a warranty at least as favorable to Owner as that customarily given by such manufacturer to others. Contractor shall inform itself as to any conditions precedent to the effectiveness of each manufacturer's warranty and comply with all such conditions (or obtain waivers thereof from the manufacturer) so that such warranty shall be fully effective. If any event occurs which might invalidate any manufacturer's warranty, Contractor shall promptly notify the Owner and the Architect.
- E. All warranty periods shall commence on the Date of Substantial Completion except that, if it is discovered after said date that certain work or materials were not in fact in conformance with the requirements of the Contract Documents, the applicable warranty period shall re-commence from the completion of the repair or replacement of such Work to make it so conform.
- F. The fact that a manufacturer's warranty differs in its terms from those of the Contractor or any Subcontractor, the acceptance by the Owner of any warranty of a manufacturer or Subcontractor, or the fact that the Owner has claimed initially on such warranty, shall not in any way release Contractor from his warranty obligations under the Contract.

1.4 SPECIAL WARRANTIES

- A. A special warranty is one whose terms, in addition to the standard coverage offered by the manufacturer, contain other special provisions, including:
 - 1. Acknowledgment of specified list of items which shall be specifically noted as being covered by the warranty.
 - 2. Acknowledgment of specific conditions for use or exposure.
 - 3. Extension of warranty to waive standard exceptions or to extend limits including time.
 - 4. Requirements for specific performance by other trades including method of separation and protection from, or assurance of compatibility with, adjacent materials.
 - 5. Assemblies and systems which may include products of other manufacturers.
 - 6. Conditions where certain performance criteria are specified and must be either acknowledged or actual limits are required to be determined by performance testing subject to Owner's review and acceptance.
 - 7. Conditions where manufacturer's continuing involvement such as maintenance or advisory service is required.
- B. Maintenance Service During Warranty Period:
 - 1. Reference to routine maintenance required to be performed by the Owner during the warranty period shall be listed in the original submittal of proposed warranty.

2. All other administration and maintenance service required during the warranty period, including installation of items repaired or replaced under the terms of the warranty shall be included in the original Contract.

1.5 SERVICE CONTRACTS

- A. Required types of Service Contract Proposals are scheduled under Schedule of Required Submittals and are listed in the Trade Sections.
- B. Where specified, the Subcontractor or Manufacturer originally supplying services and skills required for proper maintenance and agreeing to maintain availability of replacement parts and materials.
- C. The Service Contract is in addition to, and independent of, the Warranty and shall not act to either extend the Warranty or to reduce the Contractor's responsibilities thereunder.
- D. Unless otherwise specified or agreed, Service Contracts shall be written for a period of five (5) years starting with the termination of similar services included under the warranty and shall include cancellation privilege annually when exercised at least 60 days prior to anniversary date.
- E. The Contractor shall:
 1. Prior to submittal of Manufacturer of Subcontractor for approval, verify that specified service is available and will be offered.
 2. Secure from the Manufacturer of Subcontractor a bona fide proposal to perform the specified services.
 3. When so directed, assist the Architect in obtaining proposals for the performance of the specified services by other competent parties.

1.6 ADVISORY AND INSPECTION SERVICE

- A. Advisory and Inspection Service consists of:
 1. Periodic inspection on a regular scheduled basis. Include schedule of proposed inspections in the agreement.
 2. All necessary information, including special training, where required to adequately instruct Owner's maintenance personnel in preventative maintenance procedures, and periodic inspection to verify that such procedures are adequate.
 3. Providing recommendations for additional preventative maintenance repairs and treatments. If such maintenance work is recommended:
 - a. Obtain or submit price quotations for recommended work.
 - b. When so instructed by the Owner, make all necessary arrangements for the performance of the Work.
- B. Parts and Materials Agreement:
 1. Where standard commercially available parts or materials are suitable for maintenance or repair, inform Owner concerning trade name or description and location where they may be obtained.

2. Where parts or materials are not readily available maintain replacement stocks at a location as required to prevent undue delay in repairs or loss of use of equipment pending delivery.

1.7 MAINTENANCE SERVICE

- A. A Maintenance Service Contract is an agreement that in addition to Advisory and Inspection Service, the Manufacturer will provide, or otherwise make available through his agent, a regular maintenance service program scheduled during normal working hours.
- B. Proposals shall schedule proposed times for servicing and list the services to be performed.
- C. Maintenance service of equipment shall be performed solely by the original Equipment Contractor and shall not be assigned or transferred to any agent or subcontractor without the approval of the Owner.
- D. Repairs:
 1. Permanent repairs shall be started within seven (7) days after notification by the Owner.
 2. In the event that emergency and permanent repairs are not started within the specified time limits, or if the work is stopped without the Owner's consent, the Owner shall have the same options to have repairs performed by others as specified under Warranties without invalidating this agreement.
- E. Equipment maintenance shall include systematic examinations, and adjustments and lubrication of all equipment. The Equipment Maintenance Contractor shall repair and replace electrical and mechanical parts whenever required using only genuine standard parts recommended or produced by the manufacturer of the equipment.
- F. Addition work when so directed by the Owner shall be included under the work of the Maintenance Contract and the Contractor shall be reimbursed at the then prevailing rate for the cost of materials, labor and services. Such additional work shall include:
 1. Repairs or replacement required as a result of negligence, abuse, or other actions contrary to the Equipment Contractor's operating instructions.
 2. Improvement or additional equipment required by the Owner, Insurance Companies, or Governmental Authorities.
 3. Except for emergency service, the additional cost for overtime work based on the difference between regular and overtime labor when the Owner requests that such work be performed outside of regular working and so authorized in writing.
- G. Additional requirements for specific maintenance contracts are specified in the various Trade Sections.

1.8 CERTIFICATION

- A. Product Certification: See Division 1.
- B. Workmanship Certification is a statement by the applicator or installer that all materials and workmanship in connection with the system, have been furnished and installed in complete conformance with Contract Documents, and with the manufacturer's specifications and requirements for the particular type of use specified.

- C. A product certification where specified as a requirement shall be in a form similar to the following:

"We, the (Manufacturing Company), certify that the complete system as detailed and specified can be installed and will perform in accordance with the requirements of the specifications and the ASTM Standards referenced therein for the guarantee period of one year or such longer period as may be negotiated between the Owner and the (Manufacturing Company).

Upon completion of the Project we will inspect the work and certify to the Owner that the system as installed is in accordance with the Manufacturer's requirements or indicated in writing what remedial action is necessary in order that it does so conform."

****END OF SECTION****

ELECTRONIC PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: General Requirements for preparation and submittal of Project Record Documents.

1.2 DEFINITIONS

- A. Record Documents: Copies of the Contract Documents, Shop Drawings, Product Data and Samples maintained at the site for purpose of recording changes and other project information.
- B. Maintenance and Parts Manuals: Annotated PDF file format Brochures, instructions, parts lists and similar documents, published by manufacturers and suppliers of materials and equipment for purpose of providing information necessary to maintenance, repair and replacement.
- C. "As-Built" Drawings: Except for "as-built" corrections to the Shop Drawings the only record of architectural as-built conditions required will be clean copy of the Contractor's notations on the Record Drawings in Annotated PDF file format, unless otherwise specified.
- D. "As-Built" drawings for Mechanical, Electrical and Life Safety or Security Systems shall be fully dimensioned and detailed drawings, in Annotated PDF file format, showing all systems as they exist at the completion of Work.

1.3 SCHEDULES

- A. Prepare schedule listing required Record Drawings and Maintenance Manual submittals in accordance with "Submittals" Section of this Division 01.
- B. Keep schedule up to date listing record drawings and other documents as they are received from Manufacturers, Suppliers and Subcontractors.
- C. Hold all such material until completion of the project and submit when directed.

1.4 DRAWINGS AND SPECIFICATIONS AT THE SITE

- A. Each Contractor shall maintain at the site and available for reference by the Owner and the Architect one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications applicable to their portion of the Work, in good order and marked to record all changes made during construction.
- B. The Drawings, marked to record all changes made during construction, shall be delivered to the Owner upon completion of the Work in Annotated PDF file format.
- C. Record Documents: At the date of Final Completion and as condition precedent to Final Payment, each Contractor shall furnish the following documents to the Owner:

1. Record Drawings in PDF file format showing the field changes affecting the general construction, mechanical, electrical, and all other Work, and indicating the Work as actually installed in the building.
 - a. These shall consist of carefully drawn markings on a set of black and white prints of the Construction Documents obtained especially for the purpose unless otherwise specified. The prints can be scanned into a PDF file when project is completed or the contractor can keep a Annotated PDF file on site.
 - b. The Contractor shall maintain at the job site one set of Construction Documents and indicate thereon each field change as it occurs.
2. A neatly arranged searchable PDF file containing the wiring and control diagrams, operating and maintenance instructions, cuts of all mechanical and electrical equipment and fixtures, as installed including catalogues or parts lists from the prime manufacturer. Said lists shall not be based on local dealer stock number systems.

1.5 RECORD DRAWINGS

- A. Record Drawings are required to establish the location of concealed work deviations from details or dimensions indicated on the construction drawings. Where location or dimensions of portions of the work is indicated by note or line drawings or otherwise indicated to be at the option of the Contractor, the final determination of such options shall be indicated in the Record Drawings.
- B. Record Drawings are required for information only but are intended to provide complete information for as-built drawings.
- C. Final PDF file record copy of all Shop Drawings shall be submitted showing all corrections made and also indicating all field changes or other variations from the details as originally reviewed by the Contractor and the Architect.

1.6 OPERATING AND MAINTENANCE MANUALS

- A. Prior to completion of work in this Contract, each Contractor shall submit for review by the Architect searchable PDF file of manufacturer's catalog data covering all fixtures, equipment and finish materials incorporated into the project. Manufacturer's catalog data shall include full identification of the equipment or fixture capacities, current characteristics, dimensions, and identification of all replacement parts. Operating instructions for all installed equipment, including supplier's names and telephone numbers shall be placed on or lettered on the front page of each catalog or manual.
- B. Maintenance procedure descriptions shall be submitted for all materials requiring special treatments or continued maintenance work and for all assemblies, which may require parts replacement during the life of the installation. Manuals shall indicate recommended schedule for routine service and shall provide complete instructions for performing such service.
- C. Manuals and catalogs shall be searchable PDF format. Each item shall be tab and shall have an index. All material shall be grouped together by specification number.
- D. Contractor shall arrange and provide for the services of factory representatives or other authorized qualified specialists to provide operating and maintenance instruction sessions

directly with Owner's related operating and maintenance personnel for the systems, equipment and materials involved.

- E. These requirements are in addition to other similar requirements stated elsewhere in the Contract Documents including those of "Warranties" Section of Division 01.
- F. Equipment Operation manuals and operating instructions for each item of mechanical and electrical equipment:
 - 1. Operation and Maintenance Charts: Searchable PDF and one (1) hard copy of an operating and maintenance instruction chart which will incorporate applicable comprehensive descriptive instructions, lay-outs, diagrams or any other information that will necessary and/or of value to the operating and maintenance personnel. Hard copy of the charts shall be framed and glazed and mounted at a designated location, and the other three sets shall be included in the operation and maintenance manuals.
 - 2. Operation and Maintenance Manuals: Searchable PDF file of an operation and maintenance manual which shall contain complete instructions for overall operation and maintenance of the facility and its component parts. The manual shall also contain the operating and maintenance instruction charts as specified.

****END OF SECTION****

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building or structure.
 - 2. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
 - 1. Division 01 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
 - 2. Division 26 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of temporary partitions and means of egress.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- E. Predemolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1. Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
 - 1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.
 - a. Roofing.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.

- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - 1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
 - 5. Refer to Divisions 26 for other applicable requirements and limitations.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 - 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - a. Remove debris from elevated portions by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.
 - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
 10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
 11. Explosives: Use of explosives is not permitted.
- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area on-site .
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- F. Concrete: Demolish in small sections. Cut concrete to a depth of at least **3/4 inch (19 mm)** at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.
- G. Structural Steel: Dismantle field connections without bending or damaging steel members. Do not use flame-cutting torches unless otherwise authorized by Architect.
1. Transport steel trusses and joists as whole units without dismantling them further.

- H. Below-Grade Construction: Demolish in sections. Remove below-grade construction, including basements, foundation walls and footings, completely to at least 12 inches below grade unless otherwise indicated on Drawings.
- I. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- J. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- K. Building Components: Remove metal gratings, metal ladders, doors, windows, door hardware, cabinets, mirrors, chalkboards and marker boards, tackboards, toilet accessories, plumbing fixtures, and light fixtures, as whole units, intact and undamaged.
- L. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.
- M. Carpet and Pad: Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, and tack strips.
- N. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
 - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- O. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.
- P. Existing Utilities: Unless otherwise indicated on Drawings, demolish existing utilities and below-grade utility structures that are within 5 feet (1.5 m) outside of footprint indicated for new construction. Abandon utilities outside this area.
 - 1. Fill abandoned utility structures with satisfactory soil materials according to backfill requirements in Division 2 Section "Earthwork."
 - 2. Piping: Disconnect piping at unions, flanges, valves, or fittings.
 - 3. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.6 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 01 Section "Cutting and Patching."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Items and Construction to Be Removed: As indicated on Drawings.
- B. Existing Items to Be Removed and Salvaged: As indicated on Drawings.
- C. Existing Items to Be Removed and Reinstalled: As indicated on Drawings.
- D. Existing Items to Remain: As indicated on Drawings.

****END OF SECTION****

CONCRETE TOPPING/REPAIR

PART 1 – GENERAL

1.10 SUMMARY

- A. Provide very rapid hardening, shrinkage compensated, high strength repair mortar for full depth horizontal structural repair of existing substrate greater than 1-1/2 inches.
- B. Provide Self-Leveling Portland Cement and Underlayment for placement over existing concrete substrate less than 1-1/2"

1.20 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation for each material and product used.

1.30 REFERENCES

- A. ASTM C 39: Compressive Strength of Cylindrical Concrete Specimens.
- B. ASTM C 109: Compressive Strength of Hydraulic Mortars.
- C. ASTM C 191: Setting Time of Hydraulic Cement.
- D. ASTM C 882: Slant Shear Bond Strength.
- E. ASTM C 928: Rapid Hardening Cementitious Materials for Concrete Repairs.
- F. ASTM C 1059: Standard Specifications for Latex Agents for Bonding Fresh to Hardened Concrete.

1.40 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: The manufacturer shall be a company with at least fifteen years experience in the manufacturer and marketing of cementitious dry packaged repair materials.
- B. Installer's Qualifications: The contractor shall be qualified to perform the work specified by reason of experience.

1.50 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.
- B. Store products in a dry area. Protect from direct sunlight.
- C. Handle products in accordance with manufacturer's printed recommendations.

PART 2 – PRODUCTS

2.10 MATERIALS FOR CONCRETE REPAIRS MORE THAN 1-1/2"

- A. Very rapid hardening, shrinkage compensated high strength, hydraulic cement based repair material for full depth concrete repairs. Comply with the following:

1. Manufacturer: Fastset™ Concrete mix (#1004-51) as manufactured by the QUIKRETE® Companies, or equal.
2. Performance and Physical Properties at 73 degrees F and 50 percent relative humidity:
 - a. Compliance: ASTM C 928 R-3 specifications
 - b. Set Time, ASTM C 191: 25-45 minutes
 - c. Compressive Strength, ASTM C39: 3000 psi (20.7 MPa) @ 3 hours, 5000 psi (34.5 MPa) @ 24 hours, 6000 psi (41.3 MPa) @ 7 days and 7000 psi (48.3 MPa) @ 28 days.
 - d. Slant Shear Bond Strength, ASTM C 882: 1000 psi (6.9 MPa) @ 24 hours, 1500 psi (10.3 MPa) @ 7 days.
 - e. Shrinkage ASTM C 928: 28 days in air > - 0.15%, 28 days in water < +0.15%
 - f. Application thickness: 1½" (38 mm) to 24" (610 mm)

2.20 MATERIALS FOR CONCRETE REPAIRS LESS THAN 1-1/2"

- A. Self-leveling, Portland Cement Based, Self Finishing, One Component Underlayment .
Comply with the following:
 1. Manufacturer: Self-Leveling Floor Resurfacer – Fast-Setting (No. 1249-51) as manufactured by the QUIKRETE® Companies, or equal.
 2. Performance and Physical Properties at 73 degrees F and 50 percent relative humidity:
 - a. Working time, ASTM C 191: 20-40 minutes
 - b. Compressive Strength, ASTM C 109 Modified: 1800 psi (12.4 MPa) @ 24 hours, 4000 psi (27.6 MPa) @ 7 days, 5500 psi (37.9 MPa) @ 28 days
 - c. Slant Shear Bond Strength, ASTM C 1059: Exceeds 1250 psi (8.6 MPa) @ 28 days
 - d. Walk On Time: 2-4 hours maximum
 - e. Tensile Bond Strength, ASTM C 1059: 300 psi (2.1 MPa) @ 7 days, 400 psi (2.8 MPa) @ 28 days

PART 3 – EXECUTION

3.10 EXAMINATION

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas landscaping from contact due to mixing and handling of materials.

3.20 SURFACE PREPARATION

A. Comply with manufacturer's printed instructions and the following:

1. Remove all spalled and unsound concrete from area to be repaired. If rusty reinforcing steel is present; it must be abrasive blasted to remove rust.
2. Remove enough material to completely expose reinforcing steel. Patch depth must be a minimum of 1½" (38 mm).
3. Clean surface to be repaired of all materials including dust, oil, dirt, and grease.
4. Seal all perimeter openings to prevent leakage. These dams should be able to retain resurfacer material at a height greater than the finished floor elevation.
5. Prime the clean dry floor surface with QUIKRETE® Bonding Adhesive (No. 9902) in accordance with manufacturer's instructions. Dilute 1 part Bonding Adhesive with 2 parts clean water. Blend Bonding Adhesive completely before using.
6. Apply with broom, roller or garden sprayer to saturate the surface.

3.30 MIXING CONCRETE REPAIRS MORE THAN 1-1/2"

A. Comply with manufacturer's printed instructions and the following:

1. Material should be mechanically mixed for a maximum of 3-4 minutes using a barrel-type concrete mixer or a standard mortar mixer.
2. Add 3 quarts (2.8L) of clean water for each 70lb (31.8 kg) bag. Add the powder to the water and mix to a stiff cohesive consistency. If more water is needed to achieve a firm workable mix, add small amounts at a time and continue to mix until the desired consistency is achieved. Do not exceed a total volume of 1 gallon (3.8L) of water for each 70lb (31.8 kg) bag. Do not mix more material than can be placed in 15 minutes.
3. Do not re-temper with additional water.

3.50 MIXING CONCRETE REPAIRS LESS THAN 1-1/2"

A. Comply with manufacturer's printed instructions and the following:

1. Material should be mechanically mixed for a minimum of 4 minutes at 250-500 RPM's using a five-gallon (19L) bucket with a ½" (12mm) drill and paddle mixer.
For large grouting applications, a standard mortar mixer may be used.
2. Add approximately 4.5 quarts (4.26L) of clean mixing water per 50 lb (22.7 kg) bag.
3. Slowly pour the powder into the water and mix to a lump free consistency. If more water is needed, add small amounts at a time and continue to mix until the desired consistency is achieved.
4. Use minimum amount of water necessary to achieve the desired flow characteristics.
Excessive water can cause separation, reduction of strength and shrinkage of cured resurfacer.

3.60 APPLICATION CONCRETE REPAIRS MORE THAN 1-1/2":

A. Comply with manufacturer's printed instructions and the following:

B. Fill the forms completely working from one end to the other. Avoid partial depth lifts which could result in cold joints.

C. Consolidate the material using hand tamping and/or chopping with a shovel. Compact around

the edges of the forms or patches.

- D. Screed the surface then apply a trowel or broom finish as desired.
- E. Do not apply if temperatures are below 40°F (4°C) or are expected to go below 32° (0°C) within a 24 hour period. Use cold water in hot weather or hot water in cold weather to achieve desired grout temperature.

3.70 APPLICATION CONCRETE REPAIRS MORE THAN 1-1/2":

- A. Comply with manufacturer's printed instructions and the following:
- B. Place the resurfacer by pouring directly from the mixing container. Placing should be done as one continuous operation.
- C. Pour in continuous strips about 1 foot (0.30 m) in width across the narrow section of floor.
- D. Protect the leveled floor until resurfacer has developed sufficient strength.
- E. Do not apply if temperatures are below 50°F (10°C) or are expected to go below 40° (4°C) within a 24 hour period. Use cold water in hot weather or hot water in cold weather to achieve desired grout temperature.

3.80 CLEANING:

- A. Remove excess material before material cures. If material has cured, remove using mechanical methods that will not damage substrate.

****END OF SECTION****

METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes the following metal fabrications:

- 1. Bent bearing plates as part of railing.
- 2. Steel pipe railings.

1.3 DEFINITIONS

- A. Definitions in ASTM E 985 for railing-related terms apply to this section.

1.4 SYSTEM PERFORMANCE REQUIREMENTS

- A. Structural Performance of Handrails and Railing Systems: Design, engineer, fabricate, and install handrails and railing systems to comply with requirements of ASTM E 985 for structural performance based on testing performed in accordance with ASTM E 894 and E 935.
- B. Structural Performance: Design, engineer, fabricate, and install the following metal fabrications to withstand the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each respective component of each metal fabrication.
 - 1. Handrail and Guardrail Assemblies: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lbs. applied at any point nonconcurrently, vertically downward, or horizontally.
 - b. Uniform load of 50 lbs. per linear ft. applied vertically and horizontally.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 2. Components of Handrail and Guardrail Assemblies: Capable of withstanding a horizontal concentrated load of 50 lbf applied to one sq. ft. at any point in the system including panels, intermediate rails balusters, or other elements composing the infill area.
 - a. Above load need not be assumed to act concurrently with uniform horizontal loads on top rails of railing systems in determining stress on guard.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details for metal fabrications.
 - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

- B. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firms experienced in successfully producing metal fabrications similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.
- B. Installer Qualifications: Arrange for installation of metal fabrications specified in this section by same firm that fabricated them.
- C. Qualify welding processes and welding operators in accordance with AWS D1.1 "Structural Welding Code - Steel," D1.3 "Structural Welding Code - Sheet Steel", and D1.2 "Structural Welding Code - Aluminum."
 - 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
- D. Engineer Qualifications: Professional engineer licensed to practice in jurisdiction where project is located and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal fabrications similar in material, design, and extent to that indicated for this Project.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabrication of products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

PART 2 - PRODUCTS

2.1 FERROUS METALS

- A. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.
- B. Steel Plates, Shapes, and Bars: ASTM A 36.
- C. Rolled Steel Floor Plates: ASTM A 786.
- D. Steel Tubing: Product type (manufacturing method) and as follows:
 - 1. Cold-Formed Steel Tubing: ASTM A 500, grade as indicated below:
 - a. Grade A, unless otherwise indicated or required for design loading.

- E. Uncoated Steel Sheet: Commercial quality, product type (method of manufacture) as follows:
 - 1. Cold-Rolled Steel Sheet: ASTM A 366.
 - 2. Hot-Rolled Steel Sheet: ASTM A 569.
- F. Steel Pipe: ASTM A 53; finish, type, and weight class as follows:
 - 1. Black finish, unless otherwise indicated.
 - 2. Schedule 80 Weight for railings and handrails, unless otherwise indicated or another weight is required by structural loads.
- G. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
- H. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.
- I. Welding Rods and Bare Electrodes: Select in accordance with AWS

2.2 FASTENERS

- A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
- C. Lag Bolts: Square head type, FS FF-B-561.
- D. Machine Screws: Cadmium plated steel, FS FF-S-92.
- E. Plain Washers: Round, carbon steel, FS FF-W-92.
- F. Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, [nondrilling]), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.
- G. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

2.3 PAINT

- A. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-664D.

2.4 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 - 1. Temperature Change (Range): 100 deg F (55.5 deg C).
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Remove sharp or rough areas on exposed traffic surfaces.
- G. Weld corners and seams continuously to comply with AWS recommendations and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- K. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
- L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.5 BENT BEARING PLATES

- A. Provide bent bearing plates for steel handrail bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts as required.

2.6 STEEL PIPE RAILINGS AND HANDRAILS

- A. General: Fabricate pipe railings and handrails to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of pipe, post spacings, and anchorage, but not less than that required to support structural loads.
- B. Interconnect railing and handrail members by butt-welding or welding with internal connectors, at fabricator's option, unless otherwise indicated.
 - 1. At tee and cross intersections, notch ends of intersecting members to fit contour of pipe to which end is joined and weld all around.
- C. Form changes in direction of railing members as follows:
 - 1. By insertion of prefabricated elbow fittings.
 - 2. By radius bends of radius indicated.
 - 3. By mitering at elbow bends.
 - 4. By bending.
 - 5. By any method indicated above, applicable to change of direction involved.
- D. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross-section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.
- E. Close exposed ends of pipe by welding 3/16-inch thick steel plate in place or by use of prefabricated fittings, except where clearance of end of pipe and adjoining wall surface is 1/4 inch or less.
- F. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnections of pipe and attachment of railings and handrails to other work. Furnish inserts and other anchorage devices for connecting railings and handrails to concrete or masonry work.
 - 1. For railing posts set in concrete fabricate sleeves from steel pipe not less than 6 inches long and with an inside diameter not less than 1/2 inch greater than the outside diameter of post, with steel plate closure welded to bottom of sleeve.
 - a. Provide friction fit, removable covers designed to keep sleeves clean and hold top edge of sleeve 1/2 inch below finished surface of concrete.
- G. Fillers: Provide steel sheet or plate fillers of thickness and size indicated or required to support structural loads of handrails where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses. Size fillers to produce adequate bearing to prevent bracket rotation and overstressing of substrate.
- H. For interior steel railings formed from steel pipe with black finish, provide nongalvanized ferrous metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.

2.7 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

- B. Finish metal fabrications after assembly.

2.8 STEEL AND IRON FINISHES

- A. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Interiors (SSPC Zone 1A): SSPC-SP3 "Power Tool Cleaning."
- B. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 "Paint Application Specification No. 1" for shop painting.
 - 1. Stripe paint all edges, corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
- B. Center nosings on tread widths with noses flush with riser faces and tread surfaces.
- C. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.2 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.

3.3 SETTING BENT BEARING PLATES

1. Set bent bearing plates as indicated on drawing and as structurally required. After the bearing members have been positioned, plumbed and leveled, drill for anchoring device. Install anchors as required by the anchor manufacturer.

3.4 INSTALLATION OF STEEL PIPE RAILINGS AND HANDRAILS

- A. Adjust railings prior to anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated, or if not indicated, as required by design loadings. Plumb posts in each direction. Secure posts and railing ends to building construction as follows:
1. Anchor railings to bent plate as indicated. Attachment can be done in shop or in field. All connection to be square and flush to attachment point and gaps will not be acceptable.

3.5 ADJUSTING AND CLEANING

- A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

****END OF SECTION****

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

1.2 SUMMARY:

- A. Types of work in this section include rough carpentry for the following:
 - 1. Wood grounds, nailers and blocking
 - 2. Framing with dimension lumber.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 06 Section "Interior Architectural Woodwork" for nonstructural carpentry items exposed to view and not specified in another Section.

1.3 DEFINITIONS:

- A. Rough carpentry includes carpentry work not specified in other sections and not exposed to view, except as otherwise indicated.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 - 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 QUALITY ASSURANCE

- A. Single source responsibility for Fire-Retardant-Treated wood: Obtain each type of fire-retardant-treated wood product from one source and by a single producer.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels, provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
- B. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

1.7 PROJECT CONDITIONS:

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Wood Preservative-Treated materials:
 - a. Baxter: J.H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.
 - f. Osmose Wood Preserving, Inc.
 - 2. Fire-Retardant-Treated Materials, Interior Type A
 - a. Baxter: J.H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.
 - 3. Fire-Retardant-Treated Materials, Exterior Type:
 - a. American Wood Treaters, Inc.
 - b. Hoover Treated Wood Products, Inc.

2.2 LUMBER, GENERAL:

- A. Lumber Standards: Manufacture lumber to comply with DOC PS 20 "American Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

- B. Inspection Agencies: Inspection agencies and the abbreviations to reference them, include the following:
1. NELMA - Northeastern Lumber Manufacturers Association
 2. RIS - Redwood Inspection Service.
 3. SPIB - Southern Pine Inspection Bureau.
 4. WCLIB - West Coast Lumber Inspection Bureau.
 5. WWPA - Western Wood Products Association.
 6. APA - American Plywood Association.
- C. Grade Stamps: Factory-mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
1. Provide seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.
 2. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by the inspection agency.
- D. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
- E. Plywood Standards: Comply with PS1 "U.S. Product standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS1 provision, with APA PRP-108. Furnish panels factory marked with APA trademarks evidencing compliance with grade requirements.

2.3 MISCELLANEOUS LUMBER AND PLYWOOD:

- A. Provide wood for support or attachment of other work including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, or as required, and as follows:
- B. Moisture content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- C. Grade: Standard Grade light framing size lumber of any species or board size lumber as required. No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 boards per SPIB rules.
- D. Plywood Grade: APA C-D PLUGGED EXTERIOR, with minimum space rating to suit support spacing and plywood thickness indicated.

2.4 MISCELLANEOUS MATERIALS:

- A. Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for

nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails.

1. Where rough carpentry work is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).

2.5 PRESERVATIVE WOOD TREATMENT BY PRESSURE PROCESS:

- A. General: Where lumber or plywood is indicated as preservative- treated wood or is specified herein to be treated, comply with applicable requirements of AWWA Standards C2 (Lumber) and C9 (Plywood). Mark each treated item with the AWPB or SPIB Quality Mark Requirements.
 1. Do not use chemicals containing chromium or arsenic.
- B. Pressure-treat above-ground items with water-borne preservatives to a minimum retention of 0.25 pcf. For interior uses, after treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19% and 15%. Treat indicated items and the following:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
- C. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces to comply with AWWA M4. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.6 FIRE-RETARDANT TREATMENT BY PRESSURE PROCESS:

- A. General: Where fire-retardant-treated wood is indicated, pressure impregnate lumber and plywood with fire-retardant chemicals to comply with AWWA C20 and C27, respectively, for treatment type indicated; identify "fire-retardant-treated wood" with appropriate classification marking of Underwriters Laboratories, Inc. (UL), U.S. Testing, Timber Products Inspection, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.
 1. Current Evaluation/Research Reports: Provide fire-retardant- treated wood for which a current model code evaluation/research report exists that is acceptable to authorities having jurisdiction and that evidences compliance of fire-retardant- treated wood for application indicated.
- B. Interior Type A: For interior locations use fire-retardant chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:
 1. No reduction takes place in bending strength, stiffness, and fastener holding capacities below values published by manufacturer of chemical formulation that are based on tests by a qualified independent testing laboratory of treated wood products identical to those indicated for this Project under elevated temperature and humidity conditions simulating installed conditions.
 2. No other form of degradation occurs due to acid hydrolysis or other causes related to manufacture and treatment.

3. No corrosion of metal fasteners results from their contact with treated wood.
- C. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

2.7 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
 1. Grade: Construction, Stud, or No.3
 2. Species:
 - a. Douglas fir-larch; WCLIB or WWPA
 - b. Hem-fir; WCLIB or WWPA
 - c. Southern Pine; SPIB
 - d. Douglas fir south; WWPA
 - e. Any species above

PART 3 - EXECUTION

3.1 INSTALLATION GENERAL:

- A. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
- B. Set carpentry work to required levels and lines, with members plumb and true and accurately cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.
- D. Countersink nail heads on exposed carpentry work and fill holes.
- E. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.
- F. Apply field treatment complying with AWPA M4 to cut surfaces of preservative treated lumber and plywood.

3.2 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS:

- A. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
- B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to form work before concrete placement.

- C. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

3.3 WOOD FURRING:

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

3.4 WOOD FRAMING, GENERAL:

- A. Provide framing members of sizes and on spacings shown, and frame openings as shown, or if not shown, comply with recommendations of "Manual for House Framing" of National Forest Products Association (N.F.P.A.). Do not splice structural members between supports.

****END OF SECTION****

INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Interior standing and running trim.
 - 2. Plastic-laminate desk.
 - 3. Solid-surfacing-material countertops.
 - 4. Shop finishing of interior woodwork.
 - 5. Metal Grommets
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
 - 2. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
 - 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.
 - 4. Include copies of warranties from chemical-treatment manufacturers for each type of treatment.

- B. Samples for Initial Selection: For each type of product involving selection of colors, profiles, or textures.
- C. Samples for Verification:
 - 1. For each species and cut of lumber and panel products with non-factory-applied finish, with 1/2 of exposed surface finished, **50 sq. in.** for lumber and **8 by 10 inches** for panels.
 - 2. For each finish system and color of lumber and panel products with factory-applied finish, **50 sq. in.** for lumber and **8 by 10 inches** for panels.
 - 3. Lumber with or for transparent finish, not less than 5 inches wide by 24 inches long, for each species and cut, finished on 1 side and 1 edge.
 - 4. Solid-surfacing material, 6 inches square.
 - 5. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish with 1 sample applied to core material and specified edge material applied to 1 edge.
 - 6. Exposed hardware and accessories, one unit for each type and finish.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For fire-retardant-treated wood, from ICC-ES.
- B. Sample Warranty: For manufacturer's warranty.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance
- B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers and wood doors with face veneers that are sequence matched with woodwork.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. Provide AWI Quality Certification Program labels indicating that woodwork complies with requirements of grades specified.
- D. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.
- E. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

- F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.
- B. Hardware Coordination: Distribute copies of approved hardware schedule to fabricator of architectural woodwork; coordinate Shop Drawings and fabrication with hardware requirements.

PART 2 - PRODUCTS

2.1 WOODWORK FABRICATORS

- A. Fabricators: Subject to compliance with requirements, provide interior architectural woodwork by one of the following:

2.2 MATERIALS

- A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

- B. Grade: Premium AA
- C. Wood Species and Cut for Transparent Finish: Red oak, rift sawn
- D. Wood Species for Opaque Finish: Any closed-grain hardwood
- E. Wood Products: Comply with the following:
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
 - 3. Particleboard: ANSI A208.1, Grade M-2
 - 4. Softwood Plywood: DOC PS 1
- F. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
 - 1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semiexposed edges.
- G. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - 1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - a. Formica Corporation.
 - b. Nevamar Company, LLC; Decorative Products Div.
 - c. Pionite Industries.
 - d. Wilsonart International; Div. of Premark International, Inc.
- H. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Avonite, Inc.
 - b. E. I. du Pont de Nemours and Company.
 - c. Formica Corporation.
 - d. Wilsonart International; Div. of Premark International, Inc.
 - e. L.G. Hi'Macs Co.
 - 2. Type: Standard type unless Special Purpose type is indicated.
 - 3. Colors and Patterns: Up to two (2) colors as selected by Architect from manufacturer's full range of Corian Price Group D colors.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Lumber: AWPAC2 Kiln dry after treatment to a maximum moisture content of 19 percent.
- B. Plywood: AWPAC9. Kiln dry after treatment to a maximum moisture content of 18 percent.
- C. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- D. For exposed items indicated to receive transparent finish, do not use chemical formulations that contain colorants or that bleed through or otherwise adversely affect finishes.
- E. Do not use material that is warped or does not comply with requirements for untreated material.
- F. Mark lumber with treatment quality mark of an inspection agency approved by ALSC's Board of Review.
 - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- G. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
 - 1. For exposed plywood indicated to receive a stained or natural finish, mark back of each piece.
- H. Application: Where indicated.

2.4 CABINET HARDWARE AND ACCESSORIES

- A. Install finish hardware for all items of millwork under supervision of the Hardware Supplier.
- B. All cabinet hardware indicated in this Section shall be provided by the Millwork Contractor. Verify which items of finish hardware are specified under Division 08 Section "Finish Hardware."
- C. Furnish and install all cabinet accessories specified or indicated on drawings.
- D. Cabinet Hardware Schedules; except otherwise indicated:
 - 1. Shelving Standards and Clips: KV #255 (for flush mounting) and KV #233 (for surface mounting) with 5/8 inch screw nails, bright nickel finish and KV #256 bright nickel clips, quantity as required.
 - 2. Adjustable Shelving Pins: KV #327.
 - 3. Metal Grommets: Provide and install Grommet Liners equal to "Mockett Corp. No. MM5A" 3" solid brass grommet liner in satin chrome (26D). Provide and install Grommet Caps equal to "Mockett Corp. No. MM5" 3" solid brass cap in satin chrome (26D).
 - 4. Other special hardware as indicated.

2.5 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- C. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
- D. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Wood Glues: 30 g/L.
 - 2. Contact Adhesive: 250 g/L.
- E. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.6 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium grade interior woodwork complying with referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch (19 mm) Thick or Less: 1/16 inch (1.5 mm).
 - 2. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).
 - 3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm).
- D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 - 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

- E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

- 1. Seal edges of openings in countertops with a coat of varnish.

2.7 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Grade: Premium
- B. Wood Species and Cut: Red oak, rift sawn.
- C. For trim items wider than available lumber, use veneered construction. Do not glue for width.
- D. For rails wider or thicker than available lumber, use veneered construction. Do not glue for width or thickness.
- E. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
- F. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- G. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

2.8 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Grade: Custom
- B. Wood Species: Any closed-grain hardwood.
- C. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
- D. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- E. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

2.9 PLASTIC-LAMINATE DESK

- A. Grade: Premium
- B. AWI Type of Cabinet Construction: As indicated.
- C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other Than Tops: Grade HGS
 - 2. Postformed Surfaces: Grade HGP .
 - 3. Vertical Surfaces: Grade HGS.

4. Edges: Grade HGS or matching PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish.

D. Materials for Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS.
 - a. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade VGS.
2. Drawer Sides and Backs: Thermoset decorative panels.
3. Drawer Bottoms: Thermoset decorative panels.

E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

F. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from laminate manufacturer's full range in the following categories:
 - a. Solid colors, matte finish.
 - b. Solid colors with core same color as surface, matte finish.
 - c. Wood grains, matte finish.
 - d. Patterns, matte finish.

G. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers, unless located directly under tops.

2.10 SOLID-SURFACING-MATERIAL COUNTERTOPS

- A. Grade: Premium
- B. Solid-Surfacing-Material Thickness: 1/2 inch (12.7 mm).
- C. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
 1. As selected by Architect from manufacturer's full range.
- D. Fabricate tops in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

2.11 SHOP FINISHING

- A. Grade: Provide finishes of same grades as items to be finished.
- B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
- C. General: Shop finish transparent-finished interior architectural woodwork at fabrication shop as specified in this Section. Refer to Division 9 painting Sections for finishing opaque-finished architectural woodwork.

- D. General: Drawings indicate items that are required to be shop finished. Finish such items at fabrication shop as specified in this Section. Refer to Division 9 painting Sections for finishing architectural woodwork not indicated to be shop finished.
- E. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.
- F. Transparent Finish:
 - 1. Grade: Premium
 - 2. WI Finish System 4: Conversion varnish or WI Finish System 5: Catalyzed polyurethane.
 - 3. Staining: Match Architect's sample. .
 - 4. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
 - 5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.

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- F. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- G. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches (1500 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
 - 1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
 - 2. Install wall railings on indicated metal brackets securely fastened to wall framing.
 - 3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).
- H. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Maintain veneer sequence matching of cabinets with transparent finish.
 - 3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) o.c. with 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
- I. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 2. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 3. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and to walls with adhesive .
 - 4. Calk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."
- J. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
- K. Refer to Division 9 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes joint sealants for the following locations:
 - 1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:
 - a. Control and expansion joints in cast-in-place concrete.
 - b. Control and expansion joints in unit masonry.
 - c. Joints of stonework set without mortar.
 - d. Joints between different materials listed above.
 - e. Perimeter joints between materials listed above and frames of doors and windows.
 - f. Control and expansion joints in ceiling and overhead surfaces.
 - g. Other joints as indicated.
 - 2. Exterior joints in horizontal traffic surfaces as indicated below:
 - a. Control and expansion joints in brick pavers.
 - b. Control, expansion, and isolation joints in cast-in-place concrete slabs.
 - c. Tile control and expansion joints.
 - d. Joints between different materials listed above.
 - e. Other joints as indicated.
 - 3. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
 - e. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 - f. Perimeter joints of toilet fixtures.
 - g. Other joints as indicated.
 - 4. Interior joints in horizontal traffic surfaces as indicated below:
 - a. Control and expansion joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

- B. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.
- C. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
 - 2. Conduct field tests for each application indicated below:
 - a. Each kind of sealant and joint substrate indicated.
 - 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
 - 6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

- C. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- G. Field-Adhesion Test Reports: For each sealant application tested.
- H. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.8 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
 - 2. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.9 SEQUENCING AND SCHEDULING

- A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

1.10 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealants to comply with the following:
 - 1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C 920 and other requirements indicated on each Elastomeric Joint Sealant Data Sheet at end of this Section, including those requirements referencing ASTM C 920 classifications for Type, Grade, Class, and Uses.
- B. Products: Subject to compliance with requirements, provide one of the products specified in each Elastomeric Joint Sealant Data Sheet.
- C. GLAZING SEALANT shall be Dow Corning silicone sealant No. 795 or Tremco "Spectrum 2" or General Electric "Silglaze", in a standard color designated by the Architect.

- D. CONSTRUCTION SEALANT shall be Tremco "Spectrum 3" silicone Type S, Grade-NS. Class 50 or approved equal from Dow Corning or General Electric, in standard color designated by architect.
- E. ACRYLIC LATEX SEALANT shall be one-part conforming to ASTM C-834-76 as manufactured by TREMCO "Tremflex 834", PECORA or PTI. Color shall be selected by the Architect from standard colors. This material shall be used at interior areas around windows, doors, frames, precast concrete slabs, and interior masonry walls.
- F. ACOUSTICAL SEALANT shall conform to ASTM-D-217 and be a synthetic rubber base, as manufactured by TREMCO. This material shall be used wherever interior partitions butt up against exterior walls or drywall ceilings.
- G. ON-GRADE JOINT SEALANT shall be one or two-part, self-leveling pouring grade polyurethane as manufactured by Tremco THC 900/901", Pecora "NR-200", Sonaborn SL-2 or Master Mechanics "Vulkem #245".

2.3 JOINT SEALANT BACKINGS

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. Open-cell polyurethane foam.
 - 2. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
 - 3. Proprietary, reticulated, closed-cell polymeric foam, nonoutgassing, with a density of 2.5 pcf and tensile strength of 35 psi per ASTM D 1623, and with water absorption less than 0.02 gms/cc per ASTM C 1083.
 - 4. Any material indicated above.
- C. PRIMER: Provide type as recommended by the sealant manufacturer for the varied joint surfaces.

2.4 COMPRESSION SEALS

- A. Performed Foam Sealant: Manufacturer's standard preformed, precompressed, impregnated open-cell foam sealant manufactured from high-density urethane foam impregnated with a nondrying, water repellant agent; factory-produced in precompressed sizes and in roll or stick form to fit joint widths indicated and to develop a watertight and airtight seal when compressed to degree specified by manufacturer. Provide products which are permanently elastic, mildew-resistant, non-migratory, nonstaining, compatible with joint substrates and other joint sealers, and comply with the following requirements:
 - 1. Impregnating Agent: Neoprene rubber suspended in chlorinated.
 - 2. Density: 9-10 lb./cu. ft.

3. Backing: Pressure sensitive adhesive, factory applied to one side, with protective wrapping.
4. Color: Manufacturers standard gray at building expansion joint, black at all other locations.
5. Acceptable Manufacturers/Products: Subject to compliance with requirements, provide one of the following or approved equal:
 - a. [Dayton Superior Specialty Chemicals](#); Polytite Standard.
 - b. [EMSEAL Joint Systems, Ltd.](#); Emseal 25V.
 - c. [Sandell Manufacturing Co., Inc.](#); Polyseal.
 - d. [Schul International, Inc.](#); Sealtite
 - e. [Willseal USA, LLC](#); Willseal 150

2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - APPLICATION

3.1 SEALANT TYPE DETERMINATION

- A. USE EXTERIOR CONSTRUCTION SEALANT at above-grade exterior joints. Use same sealant at interior side of joint if exterior material is the same through the wall, such as a metal frame or single-wythe block wall.
- B. USE INTERIOR ACRYLIC LATEX SEALANT at all other above-grade interior joints, such as at interior hollow metal frames, wood, stone, brick or drywall, in any combination.
- C. USE PAVING SEALANT at all sealed joints on traffic bearing surfaces and at grade.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from

above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form release agents from concrete.
 4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 962 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Solvent-Release-Curing Sealant Installation Standard: Comply with requirements of ASTM C 804 for use of solvent-release-curing sealants.
- D. Latex Sealant Installation Standard: Comply with requirements of ASTM C 90 for use of latex sealants.
- E. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 19 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- F. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- G. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

- H. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Provide concave joint configuration per Figure 5A in ASTM C 62, unless otherwise indicated.
 - 2. Provide flush joint configuration, per Figure 5B in ASTM C 962, where indicated.
 - a. Use masking tape to protect adjacent surfaces of recessed tooled joints.
 - 3. Provide recessed joint configuration, per Figure 5C in ASTM C 962, of recess depth and at locations indicated.
- I. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, and to comply with sealant manufacturer's directions for installation methods, materials, and tools that produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in conformance with sealant manufacturer's recommendations.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

****END OF SECTION****

FRP DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS/DESCRIPTION

- A. Drawings and General provision of Contract, including General and Supplementary Conditions and Division 01 Specification sections, are a part of this Section for the Base Bid and applicable alternates.
- B. This Section includes:
 - 1. FRP doors - provide FRP doors as specified, shown or scheduled, with components and accessories for a complete and proper installation.
 - 2. Factory glazing of FRP door lites.
 - 3. Manufacturer hardware.
 - 4. Factory installation of finish hardware.
- C. The following sections contain requirements that relate to this Section:
 - 1. Division 07 Section "Joint Sealants" for sealants and gaskets.
 - 2. Division 08 Section "Glazing" for glass and glazing.
 - 3. Division 08 Section "Door Hardware" for door hardware.
- D. System Performance:
 - 1. Provide exterior and interior doors assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.
 - a. Thermal Transmittance (exterior doors): U-value of not more than 0.09 Btu/(hr x sf x Degrees F.) per AAMA 1503.1.

1.2 QUALITY ASSURANCE

- A. Comply with fire-resistance, flammability, regulations as interpreted by governing authorities and as follows:
 - 1. Face Sheets tested in accordance with ASTM E84-79A shall have the following ratings; Standard Face sheets:
 - a. Smoke Developed: not greater than 345.
 - b. Flame Spread: not greater than 145.
 - 2. Class A Face Sheets (Required on interior face of all exterior doors):
 - a. Smoke Developed not greater than 340.
 - b. Flame Spread: not greater than 15.

- B. Manufacturer Qualifications: Shall have produced fiberglass reinforced doors for at least five years.
- C. Field Measurement:
 - 1. Take field measurements prior to fabrication of doors and frames to insure proper fitting of assemblies. Successful bidders are expected to field verify all dimensions, sizes, quantities and the material required to complete this project. Failure to do so will not relieve the successful contractor from the necessity of furnishing any and all materials that may be required, without any additional cost to the Owner.

1.3 COORDINATION

- A. Door manufacturer shall be responsible for coordinating all necessary information from hardware supplier in order that doors shall be properly prepared to receive hardware and fit frames properly. Contractor shall provide manufacturer with copies of approved schedules necessary to complete manufacturing of doors. This information shall be in the possession of the door manufacturer 60 days prior to desired delivery date of doors.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
 - 1. Substitutions for products as specified MUST be submitted in accordance with Division 01. Substitute products not submitted in accordance with Division 01 Section "Product Requirements" will NOT be considered.
- B. Product Data: Submit manufacturer's specifications, standard details, and installation recommendations for components of FRP (fiberglass reinforced polyester) doors required for project, including test reports certifying that products have been tested and comply with performance requirements.
- C. Shop Drawings: Submit shop drawings for fabrication and installation of FRP (fiberglass reinforced polyester) doors, including elevations, detail sections of typical composite members, hardware mounting heights, anchorages, reinforcement, expansion provisions, and glazing.
- D. Samples: Submit 6" samples of each type and color of FRP (fiber reinforced polyester) finish, and 12" long sections of extrusions or formed shapes. Where normal color and texture variations are to be expected, include 2 or more units in each set of samples showing limits of such variations.

1.5 PRODUCT DELIVERY, HANDLING, AND STORAGE

- A. All materials supplied shall be delivered to the jobsite in their original, unopened packages with labels intact. Materials shall be inspected for damage, and the manufacturer informed of any discrepancies. Unsatisfactory materials shall not be used.
- B. All materials supplied shall be packaged in individual corrugated cartons. Doors shall "floated" within cartons, with no portion of door in contact with outer shell.
- C. All doors to be marked with individual opening numbers to correlate with the designation system used on the shop drawings for doors, frames and hardware. Markings shall be temporary, removable, or concealed.

1.6 WARRANTY

- A. Provide written warranty signed by Manufacturer, Installer, and Contractor, agreeing to replace FRP (fiberglass reinforced polyester) doors which fail in materials or workmanship within time period indicated below of acceptance. Failure of materials or workmanship includes excessive deflections, faulty operation of entrances, and deterioration of finish or construction in excess of normal weathering.
 - 1. Time Period: Ten years from date of substantial completion.
- B. Provide written warranty signed by Manufacturer guaranteeing hardware attachment of factory installed finish hardware.
 - 1. Time Period: Five years from date of substantial completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide SL17 FRP Flush Doors as manufactured by Special-Lite, Inc., and Aluminum Frames for FRP Doors as specified herein or equal products by the following.
 - 1. Vale FRP Doors.

2.2 MATERIALS AND ACCESSORIES

- A. Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate, minimum wall thickness of 1/8".
- B. Fasteners: Aluminum, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum components.
 - 1. For exposed fasteners, provide Phillips head flat head screws with finish matching item to be fastened.
- C. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise provide nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.
 - 1. Provide manufacturer's standard reinforcement for each type of hardware required, not less than .125" thick.
 - 2. Provide manufacturer's recommended fastener reinforcement.
- D. Door Face Material: Fiberglass reinforced polyester, SpecLite 3, 0.120" minimum thickness, with pebble-like embossed finish.
 - 1. Acceptable Product: Subject to compliance with the following requirements:
 - a. Impact Strength of Face Sheets: ASTM D256, Izod Impact Strength, 13.5 footpounds per inch of notch.
 - b. Abrasion Resistance of Face Sheets: ASTM D1242, 1000 cycles of Model 503 Taber Abraser with a 1000 gram load, not to exceed 0.23% weight loss.
 - c. Hardness of Face Sheets: ASTM D2583, Barcol Meter Hardness Test, not more than 50.

- d. Humidity Resistance of Face Sheets: ASTM D570, water absorption not greater than 0.40% after 24 hour immersion.
 - e. Ultra-Violet Degradation: Only slight color change, and negligible change in surface gloss and other physical properties after exposure to 500,000 Langleys.
- E. Weatherstripping: Provide manufacturer's standard replaceable weathering pile.
- 1. Factory installed concealed adjustable bottom brush with double nylon brush weatherstripping.
- F. Sealants and Gaskets: Provide sealants and gaskets in the fabrication, assembly and installation of the work, which are recommended by the manufacturer to remain permanently elastic, non-shrinking, non-migrating, and weatherproof.

2.3 FIBERGLASS REINFORCED POLYESTER (FRP) DOORS

- A. FRP Doors are to be constructed as follows:
- 1. Doors are to be 1 3/4" thick.
 - 2. Constructed of aluminum alloy rails and stiles, joined with steel tie rods, and have an inner core consisting of foamed-in-place Urethane.
 - 3. Stiles to be tubular shape to accept hardware as specified.
 - 4. Top and bottom rails to be extruded with internal legs for interlocking rigid weather bar.
 - 5. Face Sheets to be secured with extruded interlocking edges. (No snap-on trim will be accepted).
 - 6. Joinery to be 3/8" tie rods, top and bottom, bolted through an extruded spline and 3/16" riveted reinforcing angles, and secured with hex nuts.
 - 7. Core to be of Urethane foam of 3 pounds per cubic ft. density. All doors are to be properly reinforced for hardware prior to Urethane core foaming in door.
 - 8. Face Sheets:
 - a. Fiberglass Reinforced Plastic Sheets to be polyester SpecLite 3, 0.120" thick, with pebble-like finish.
 - 9. Pairs of Doors: Meeting stiles to beveled.
 - 10. All doors shall be machined for finish hardware at the factory in accordance with the templates from the hardware supplier and the Approved Hardware Schedule. For surface applied hardware, doors shall have necessary reinforcement, including the attachment of RIVNUT blind bolt fasteners. With the exception of door holders, which require field application, doors are to be shipped with surface hardware factory applied.
 - 11. Door Lites: Provide door lites factory glazed as indicated, with manufacturer's standard aluminum moldings and stops, with removable stops on inside only. Glass to be 1" insulated safety glass.

2.4 FLUSH INSULATED PANELS

- A. Flush insulated panels shall be constructed as follows:

1. Panels shall be 1" thick.
2. Panel stiles shall be formed of hardwood.
3. Core to be Urethane of 3 pounds per cubic foot density.
4. Face Skins to be as follows:
 - a. Fiberglass Reinforced polyester panel faces to be SpecLite 3, 0.120" thick, with pebble-like embossed finish.

2.5 ALUMINUM CAPPING SYSTEM

- A. Where indicated, provide a Frame capping system fabricated of .062" Aluminum, as manufactured by Special-Lite, Inc. Finish capping to match finish as supplied on other framing sections.

2.6 INSERT FRAMING

- A. Where indicated, provide insert frames fabricated of extruded 6063T5 Aluminum alloy fitted with .34 inch high by .36 inch wide wool-poly-propylene blend pile. Corner joints are to be mitered and secured with prefabricated aluminum clips. Framing as manufactured by Special-Lite, Inc., and finished to match other framing sections.

2.7 FINISH HARDWARE

- A. Hardware supplied by the door manufacturer and factory installed:
 - a. Pull: Special-Lite SL-86.
- B. Supplier: Refer to Section 08710 of these specifications for the Finish Hardware requirements for this project. Refer to approved Finish Hardware Schedule for items to be supplied to the door and frame manufacturer to install.
- C. Receive Hardware supplied in accordance with Section 08710, and Hardware Schedule, and coordinate with the Hardware requirements of this section. Report discrepancies (in writing) to the Architect immediately.
- D. Ship hardware, to be installed by manufacturer, to manufacturer with cartons marked with door numbers correlating with designation system used on shop drawings.
- E. Install all Hardware, except door holders at the fabrication plant. Remove only Hardware as required for final finishing or delivery to jobsite. Package and identify such Hardware and ship with doors and frames for installation at the project site.

2.8 FINISHES AND COLORS

- A. Fiberglass Reinforced Polyester Colors: As selected by Architect from manufacturer's complete range.
- B. Aluminum Stiles and Rails: Comply with the following:
 1. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

2. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
3. Class I Clear Anodized Finish: AA-M12C22A41 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, clear film thicker than 0.7 mil) complying with AAMA 607.1.\

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's recommendations and specifications for the installation of the doors and frames.
- B. Set units plumb, level and true to line, without warp or rack of doors, frames or panels. Anchor securely in place. Separate aluminum, and other corrodible metal surfaces, from sources of corrosion or electrolytic action at points of contact with other materials, with bituminous coatings, or other means as approved by Architect.
- C. Set saddles in a bed of compound.
- D. Clean Aluminum surfaces promptly after installation of doors and frames, exercising care to avoid damage to the protective coating (if any). Remove excess glazing and sealant compounds, dirt and other substances.
- E. Provide protective treatment and other precautions required through the remainder of the construction period, to ensure that the doors and frames will be without damage or deterioration (other than normal weathering) at the time of acceptance.
- F. Adjusting: Adjust operating hardware to function properly, for smooth operation without binding, and for weathertight seal.
- G. Caulking: Refer to Section 07900 "Joint Sealants."

****END OF SECTION****

ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Exterior and interior storefront framing.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
 - 1. Structural loads.
 - 2. Thermal movements.
 - 3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - 4. Dimensional tolerances of building frame and other adjacent construction.
 - 5. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferred to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
 - d. Glazing-to-glazing contact.
 - e. Noise or vibration created by wind and thermal and structural movements.
 - f. Loosening or weakening of fasteners, attachments, and other components.
 - g. Sealant failure.
 - h. Failure of operating units to function properly.
- B. Structural Sealant: Capable of withstanding tensile and shear stresses imposed by aluminum-framed systems without failing adhesively or cohesively. Provide sealant that fails cohesively before sealant releases from substrate when tested for adhesive compatibility with each substrate and joint condition required.

1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
 2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.
- C. Structural-Sealant Joints: Designed to produce tensile or shear stress in structural-sealant joints of less than 20 psi (138 kPa).
- D. Structural Loads:
1. Show design loads determined by Project's structural engineer on Drawings or insert loads in two subparagraphs below. Verify requirements of authorities having jurisdiction. See Evaluations.
 2. Thermal Movement: Provide systems capable of withstanding thermal movements resulting from an ambient temperature range of 120°F (67°C), that could cause a metal surface temperature range of 180°F (100°C) within the framing system.
 3. Wind Loading: Provide assemblies capable of withstanding a uniform test pressure of 25 psf inward and 25 psf outward when tested in accordance with ASTM E 330.
- E. Deflection of Framing Members:
1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m) or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.
 2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch (3.2 mm), whichever is the smaller amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components directly below to less than 1/8 inch (3.2 mm) and clearance between members and operable units directly below to less than 1/16 inch (1.5 mm).
- F. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:
1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
 2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
 3. Test Durations: As required by design wind velocity but not less than 10 seconds.
- G. Aluminum Entrance Transmission Characteristics: Provide entrance doors with jamb and head frames that comply with requirements indicated for transmission characteristics.

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1. Air Infiltration: Provide doors with an air infiltration rate of not more than 0.50 CFM for single doors and 1.0 for pairs of doors when tested in accordance with ASTM E 283 at an inward test pressure differential of 1.567 psf.
2. Condensation Resistance: Provide entrance door units tested for thermal performance in accordance with AAMA 1502 showing a condensation resistance factor (CRF) of not less than 48.

1.4 SUBMITTALS:

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 1. Substitutions for products as specified MUST be submitted in accordance with Division 1. Substitute products not submitted in accordance with Division 1 Section "Product Requirements" will NOT be considered.
- B. Product Data: Submit manufacturer's product specifications, technical product data, standard details, and installation recommendations for each type of entrance and storefront product required. Include the following information:
 1. Fabrication methods.
 2. Finishing.
 3. Accessories.
- C. Shop Drawings: Submit shop drawings for fabrication and installation of entrances and storefronts, including the following:
 1. Elevations.
 2. Detail sections of typical composite members.
 3. Hardware, mounting heights.
 4. Anchorages and reinforcements.
 5. Glazing details.
- D. Samples: Submit pairs of samples of each type and color of aluminum finish, on 12" long sections of extrusions or formed shapes and on 6" square sheets. Where color or texture variations are anticipated, include 2 or more units in each set of samples indicating extreme limits of variations.
- E. Certification: Provide certified test results showing that entrance and storefront systems have been tested by a recognized testing laboratory or agency and comply with specified performance characteristics.

1.5 QUALITY ASSURANCE:

- A. Installer's Qualifications: Entrances and storefront shall be installed by a firm that has not less than 5-years successful experience in the installation of systems similar to those required.

- B. Design Criteria: Drawings are based on one manufacturer's entrance and storefront system. Another manufacturer's system of a similar and equivalent nature will be acceptable when, in the Architect's sole judgment, differences do not materially detract from the design concept or intended performance.

1.6 PROJECT CONDITIONS:

- A. Field Measurements: Check openings by field measurement before fabrication to ensure proper fitting of work; show measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in the work. Where necessary, proceed with fabrication without field measurement, and coordinate fabrication tolerances to ensure proper fit.

1.7 WARRANTY:

- A. Special Product Warranty: Submit a written warranty, executed by the Contractor, Installer and Manufacturer, agreeing to repair or replace units (including reglazing) which fail in materials or workmanship within the specified warranty period. Failures include, but are not necessarily limited to structural failures including excessive deflection, excessive leakage or air infiltration, faulty operation, and deterioration of metals, metal finishes and other materials beyond normal weathering. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.
 - 1. Warranty period for aluminum entrances and storefront is 3 years after the date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide Kawneer Co. "451T" System or approved equal from one of the following:
 - 1. Tube Lite.
 - 2. EFCO.
 - 3. Special Lite.

2.2 MATERIALS:

- A. Aluminum Members: Provide alloy and temper recommended by the manufacturer for strength, corrosion resistance, and application of required finish; comply with ASTM B 221 for extrusions and ASTM B 209 for sheet or plate.
- B. Fasteners: Provide fasteners of aluminum, nonmagnetic stainless steel, or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum components, hardware, anchors and other components.
 - 1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125" thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.

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- C. Concealed Flashing: Provide 26 gage minimum dead-soft stainless steel, or 0.026" minimum extruded aluminum of alloy and type selected by manufacturer for compatibility with other components.
- D. Brackets and Reinforcements: Where feasible, provide high-strength aluminum brackets and reinforcements; otherwise provide nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.
- E. Concrete/Masonry Inserts: Provide concrete and masonry inserts fabricated from cast-iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 386.
- F. Compression Weatherstripping: Provide the manufacturer's standard replaceable compressible weatherstripping gaskets of molded neoprene complying with ASTM D 2000 or molded PVC complying with ASTM D 2287.
- G. Sliding Weatherstripping: Provide the manufacturer's standard replaceable weatherstripping of wool, polypropylene, or nylon woven pile, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.
- H. Glass and Glazing Materials: Glass and glazing materials shall comply with requirements of "Glazing" section of these specifications.

2.3 COMPONENTS:

- A. Storefront Framing System: Provide inside-outside matched resilient flush-glazed storefront framing system with provisions for glass replacement. Shop-fabricate and pre-assemble frame components where possible.
 - 1. Thermal-Break Construction: Fabricate storefront framing system with integrally concealed, low conductance thermal barrier, located between exterior materials and exposed interior members to eliminate direct metal-to-metal contact. Use manufacturer's standard construction that has been in use for similar projects for period of not less than 3 years.
- B. Aluminum Perimeter Door Framing:
 - 1. Fabricate tubular frame assemblies from the size and type shown. 0.125" minimum wall thickness and type 6063-T5 aluminum alloy. 0.625" x 1.25" applied door stops with screws and weatherstripping.
 - 2. Where wide strikes or electric strikes are used, a 0.625" x 1.75" stop with screws and weatherstripping shall be applied.
 - 3. Where surface applied hardware (exit device strikes, closer shoes, overhead stops, etc.) is to be mounted to the frame stop, provide solid bar stock reinforcement under the stop.
 - 4. Frame members are to be box type with four (4) enclosed sides. Open back framing will not be accepted. Frames must be anchored by removing the door stop, drilling a 0.5" pilot hole on the door side of the frame, and anchoring the frame from the wall side of the frame.

2.4 HARDWARE

- A. General: Refer to hardware section in Division 08 for requirements for hardware items other than those indicated to be provided by the aluminum entrance manufacturer.

2.5 FABRICATION

- A. General: Sizes of frame units, and profile requirements, are indicated on drawings. Variable dimensions are indicated, with maximum and minimum dimensions required to achieve design requirements and coordination with other work.
- B. Prefabrication: Before shipment to the project site, complete fabrication, assembly, finishing, hardware application, and other work to the greatest extent possible. Disassemble components only as necessary for shipment and installation.
 - 1. Pre-glaze frame units to greatest extent possible.
 - 2. Do not drill and tap for surface-mounted hardware items until time of installation of project site.
 - 3. Perform fabrication operations, including cutting, fitting, forming, drilling and grinding of metal work to prevent damage to exposed finish surfaces. For hardware, perform these operations prior to application of finishes.
- C. Welding: Comply with AWS recommendations; grind exposed welds smooth and restore mechanical finish.
- D. Reinforcing: Install reinforcing as required for hardware and necessary for performance requirements, sag resistance and rigidity.
 - 1. Attachments of all hardware shall be made using machine screws which are supplied by the manufacturer.
 - 2. All holes shall be drilled and tapped using the recommended drill size for the tap required.
 - 3. Frame stops shall be applied stop. Minimum 5/8" high x minimum 1 1/4" wide.
 - 4. Frame tubes sections should be closed back, minimum of 1/8" wall thickness.
 - 5. Where hardware is to be attached to frame stop (i.e., exit device strike, door closer shoe), a piece of solid bar stock aluminum sized to fill the frame stop void x 18" long shall be securely attached to the frame tube.
 - 6. Where it is not practical to have solid bar stock reinforcement at attachment points, use Riv-Nuts for attachment.
- E. Dissimilar Metals: Separate dissimilar metals with zinc chromate primer, bituminous paint, or other separator that will prevent corrosion.
- F. Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.
 - 1. Uniformity of Finish: Abutting extruded aluminum members shall not have an integral color or texture variation greater than half the range indicated in the sample pair submittal.
- G. Fasteners: Conceal fasteners wherever possible.

- H. Weatherstripping: For exterior doors, provide compression weatherstripping against fixed stops; at other edges, provide sliding weatherstripping retained in adjustable strip mortised into door edge.
 - 1. At interior doors and other locations without weatherstripping, provide neoprene silencers on stops to prevent metal-to-metal contact.
 - 2. Provide finger guards of collapsible neoprene or PVC gasketing securely anchored into frame at hinge-jamb of center-pivoted doors.

2.6 FINISHES:

- A. High-Performance Organic Coating: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instruction.
 - 1. Fluoropolymer Two-Coat System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
 - 2. Color and Gloss: Selected by Architect from Manufacturer's full range of colors to match existing.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Comply with manufacturer's instructions and recommendations for installation.
- B. Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Provide proper support and anchor securely in place.
 - 1. Separate aluminum and other corrodible metal surfaces from sources of corrosion of electrolytic action at points of contact with other materials. Comply with requirements specified under paragraph "Dissimilar Materials" in the Appendix to AAMA 101-85.
- C. Drill and tap frames and doors and apply surface-mounted hardware items. Comply with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.
- D. Set sill members and other members in bed of sealant as indicated, or with joint fillers or gaskets as indicated to provide weathertight construction. Comply with requirements of Division 07 for sealant, fillers, and gaskets.
- E. Refer to Division 08 Section "Glazing" for installation of glass and other panels indicated to be glazed into doors and framing, and not pre-glazed by manufacturer.

3.2 ADJUSTING:

- A. Adjust operating hardware to function properly, for smooth operation without binding, and for weathertight closure.

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3.3 CLEANING:

- A. Clean the completed system, inside and out, promptly after installation, exercising care to avoid damage to coatings.
- B. Clean glass surfaces after installation, complying with requirements contained in the "Glazing" section for cleaning and maintenance. Remove excess glazing and sealant compounds, dirt and other substances from aluminum surfaces.

3.4 PROTECTION:

- A. Institute protective measures required throughout the remainder of the construction period to ensure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

****END OF SECTION****

DOOR HARDWARE

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 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
 - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware, power supplies, back-ups and surge protection.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Door Hardware Schedule".
 - 2. Division 08 Section "Hollow Metal Doors and Frames".
 - 3. Division 08 Section "Fiberglass Reinforced Plastic Doors".
 - 4. Division 08 Section "Flush Wood Doors".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 80 - Fire Doors and Windows.
 - 4. NFPA 101 - Life Safety Code.
 - 5. NFPA 105 - Installation of Smoke Door Assemblies.
 - 6. Michigan Building Code, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - 2. Electrical Coordination: Coordinate with related Division 26 Electrical Sections the voltages and wiring details required at electrically controlled and operated hardware openings.

- D. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.
- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- D. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
 - 1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
3. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Thresholds: Not more than 1/2 inch high.
4. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
 - a. Test Pressure: Positive pressure labeling.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.

2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be 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 standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final 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. Special Warranty Periods:
1. Ten years for mortise locks and latches.
 2. Five years for exit hardware.
 3. Twenty five years for manual surface door closers.
 4. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and 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 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
 - B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - 1) Out-swinging exterior doors.
 - 2) Out-swinging access controlled doors.
 - 3) Out-swinging lockable doors.
5. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. McKinney Products (MK).
 - c. Stanley Hardware (ST).

B. Continuous Geared Hinges: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), full surface, or half surface, in standard and heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be U.L. listed for use on up to and including 90 minute rated door installations and U.L. listed for windstorm components where applicable. Factory cut hinges for door size and provide with removable service power transfer panel where indicated at electrified openings.

1. Acceptable Manufacturers:

- a. Pemko Manufacturing (PE).
- b. Select Hinge (SE).
- c. Stanley Hardware (ST).

2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Acceptable Manufacturers:

- a. Securitron (SU) - EL-CEPT Series.

- B. Electric Door Hardware Cords: Provide electric transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Acceptable Manufacturers:

- a. McKinney Products (MK) - Inner Door Cord 3 inches: QC-C003P.
- b. McKinney Products (MK) - Inner Door Cord 3 foot door: QC-C206P.
- c. McKinney Products (MK) - Inner Door Cord 4 foot door: QC-C306P.
- d. McKinney Products (MK) - Inner Door Cord 15 feet: QC-C1500P.
- e. McKinney Products (MK) - Hinge to Junction Panel 15 feet: QC-C1500P.

Provide one each of the following tools as part of the base bid contract:

- a. McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
- b. McKinney Products (MK) - Connector Hand Tool: QC-R003.

2.4 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.

4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 - a. Acceptable Manufacturers:
 - 1) Any member of Builders Hardware Manufacturers Association (BHMA).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
 1. Mortise Type: Fixed core, threaded cylinders with rings and straight- or clover-type cam.
 2. Rim Type: Fixed core, cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 4. Keyway: Corbin Russwin 67 and 77 keyway families.
- D. Keying System: Each type of lock and cylinders to be keyed to keys provided by Owner. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference, and as follows:
 1. Master Key System: Cylinders are operated by a change key and a master key.
 2. Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
 3. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.
 4. Existing System: Master key or grand master key locks to Owner's existing system.
 5. Keyed Alike: Key all cylinders to same change key.
- E. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Two (2)
- F. Owner shall provide keys for pinning purposes only. Cylinders shall be pinned to suit Owner provided bitting numbers and shall not be pinned using an existing key. Owner provided keys shall not be duplicated and shall be returned directly to Owner's representative when keying of cylinders is complete.

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped 12 gauge minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer.

Furnish with standard 2 3/4" backset, 3/4" throw anti-friction stainless steel latchbolt, and a full 1" throw stainless steel bolt for deadbolt functions.

1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) – ML2000 Series.
 - b. No Substitution – Facility Standard.

- B. Lock Trim Design: As specified in Hardware Sets.

2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
- B. Standards: Comply with the following:
 1. Strikes for Mortise Locks and Latches: BHMA A156.13.

2.8 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
 1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
 - a. Fire Exit Removable Mullions: Provide keyed removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252. Mullions to be used only with exit devices for which they have been tested.
 3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
 5. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
 6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty trim with cold forged escutcheons, beveled edges, and four threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
 - b. Where function of exit device requires a cylinder, provide an interchangeable core type keyed cylinder (Rim or Mortise) as specified in Hardware Sets.
 7. Vertical Rod Exit Devices: Provide and install interior surface and concealed vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated.
 8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
 12. Install exit devices at centerline from floor as specified in Part 3.3.B.1 of this Section to suit door designs and ADA requirements.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.
1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) - 80 Series.
 - b. Stanley Precision (PR) - Apex 2000 Series.
- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish. Provide keyed removable feature, stabilizers, and mounting brackets as specified in the Hardware Sets. At openings designed for severe wind load conditions due to hurricanes or tornadoes, provide manufacturers approved mullion and accessories to meet applicable state and local windstorm codes.
1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) - 980S Series.
 - b. Stanley Precision (PR) - 822 Series.

2.9 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.
 - b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
 - c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
 - d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
5. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as specified in the door Hardware Sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Acceptable Manufacturers:
 - a. LCN Closers (LC) – 4011 / 4111 Series.
 - b. No Substitution – Facility Standard.

2.10 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Metal Protection Plates: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from the following:
 - a. Stainless Steel: 300 series, .050-inch thick, with countersunk screw holes (CSK).
4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
5. Acceptable Manufacturers:
 - 1) Any member of Builders Hardware Manufacturers Association (BHMA).

2.11 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Acceptable Manufacturers:
 - 1) Any member of Builders Hardware Manufacturers Association (BHMA).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 1. Acceptable Manufacturers:
 - 1) Any member of Builders Hardware Manufacturers Association (BHMA).

2.12 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Acceptable Manufacturers:
 1. Pemko Manufacturing (PE).
 2. Reese Enterprises, Inc. (RS).
 3. Zero International (ZE).

2.13 ELECTRIC STRIKES

- A. Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.
 1. Acceptable Manufacturers:
 - a. Folger Adam EDC (FO).
 - b. HES (HE).
 - c. Von Duprin (VD).
- B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.
 1. Acceptable Manufacturers:
 - a. HES (HE) - 9500/9600 Series.
- C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.14 ELECTRONIC ACCESSORIES

- A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Acceptable Manufacturers:

- a. Securitron (SU) - DPS Series.

- B. Switching Power Supplies: Provide UL listed or recognized filtered and regulated power supplies. Provide single, dual, or multi-voltage units as shown in the hardware sets. Units must be expandable up to eight Class 2 power limited outputs. Units must include the capability to incorporate a battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Acceptable Manufacturers:

- a. Securitron (SU) - AQ Series.

2.15 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.16 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Exit devices shall be installed at 38 – 7/16 inches from floor to centerline of push rail.
 - 2. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 4. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 5. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

- B. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. RF - Rixson
4. RO - Rockwood
5. RU - Corbin Russwin
6. SA - Sargent
7. AD - Adams Rite
8. HS - HES
9. NO - Norton
10. LC - LCN Closers
11. 00 - Other
12. SU - Securitron
13. LU - Lund Equipment Co., Inc.

14. OT - By Others

Hardware Schedule

Set: 1

Doors: L100A, L100B, L100C

1 Hardware	Existing Door, Frame and Hardware	OT
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Set: 2E

Doors: L100D

1 Continuous Hinge	CFM-SLF-HD1		PE
1 Exit Device (rim, nightlatch)	16 19 43 8804 LC	US32D	SA
1 Cylinder	Cylinder as Required.		RU
1 Electric Strike	9600	630	HS
1 SMART Pac Bridge Rectifier	2005M3		HS
1 ElectroLynx Adaptor	2004M		HS
1 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO
1 Concealed Overhead Stop	6-036	630	RF
1 Surface Closer	4011 REG	AL	LC
1 Position Switch	DPS-M-BK		SU

Notes: Valid use of card reader outside unlocks electric strike to gain access. Key override outside lever retracts latch bolt. Free egress always permitted. Door is not monitored.
Card reader, connection to electric strike, conductor, power supply, and access control system by Access Control Provider.

Set: 2F

Doors: L100E, L100F, L100G

1 Continuous Hinge	CFM-SLF-HD1		PE
1 Exit Device (exit only)	16 19 43 8810 LC	US32D	SA
1 Cylinder	Cylinder as Required.		RU
1 Electric Strike	9600	630	HS
1 SMART Pac Bridge Rectifier	2005M3		HS
1 ElectroLynx Adaptor	2004M		HS
1 Pull	RM201 Mtg-Type 12XHD	US32D-316	RO

SECTION 087100
DOOR HARDWARE

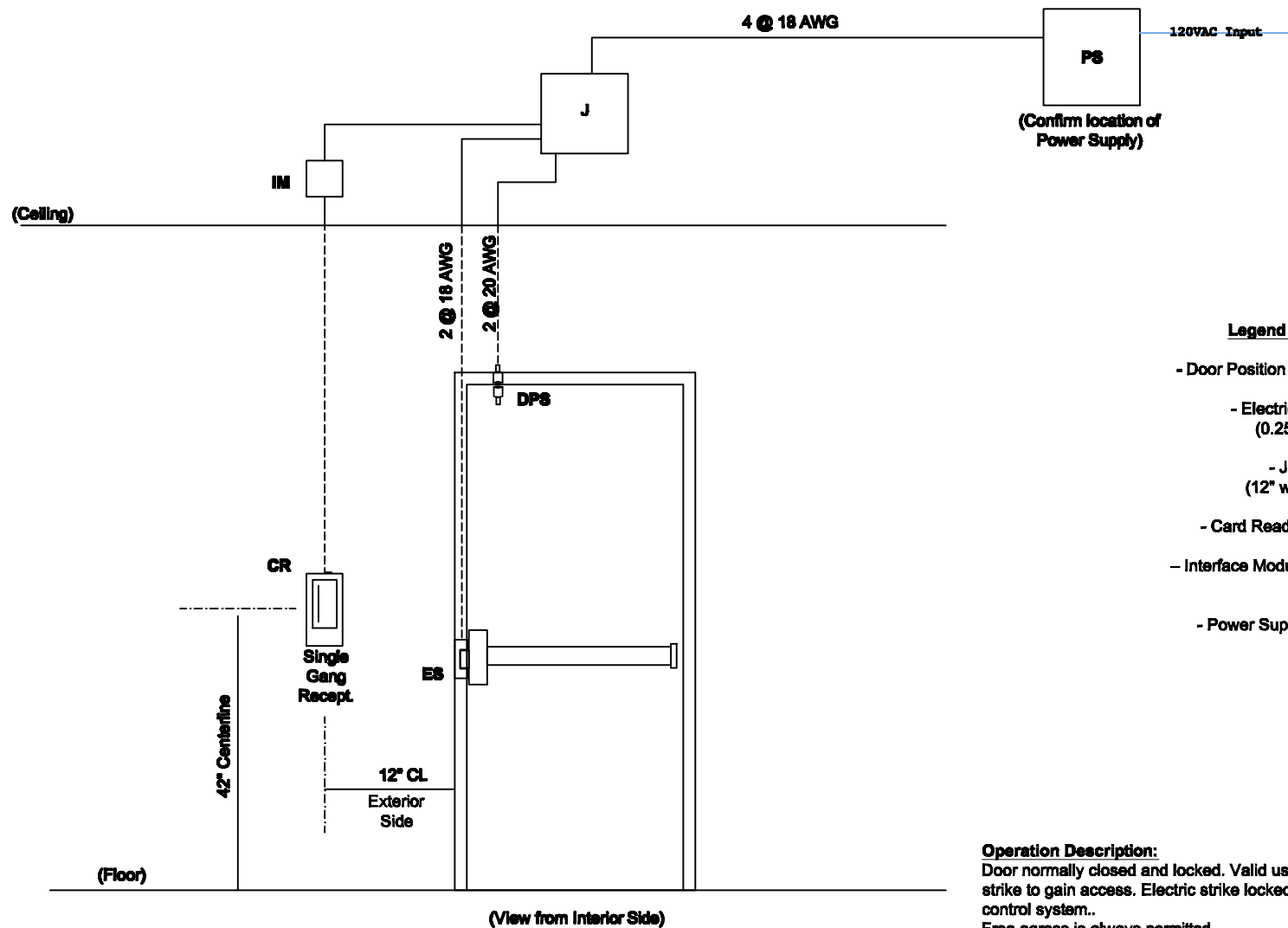
1 Surface Closer	4111 SHCUSH 4110-30 4110-61	AL	LC
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Notes: Electric strike locked or unlocked as programmed by access control system schedule.

Keyed cylinder inside controls dogging of latch bolt.
Free egress always permitted.

3.9 DOOR WIRING DIAGRAMS - Attached

****END OF SECTION****

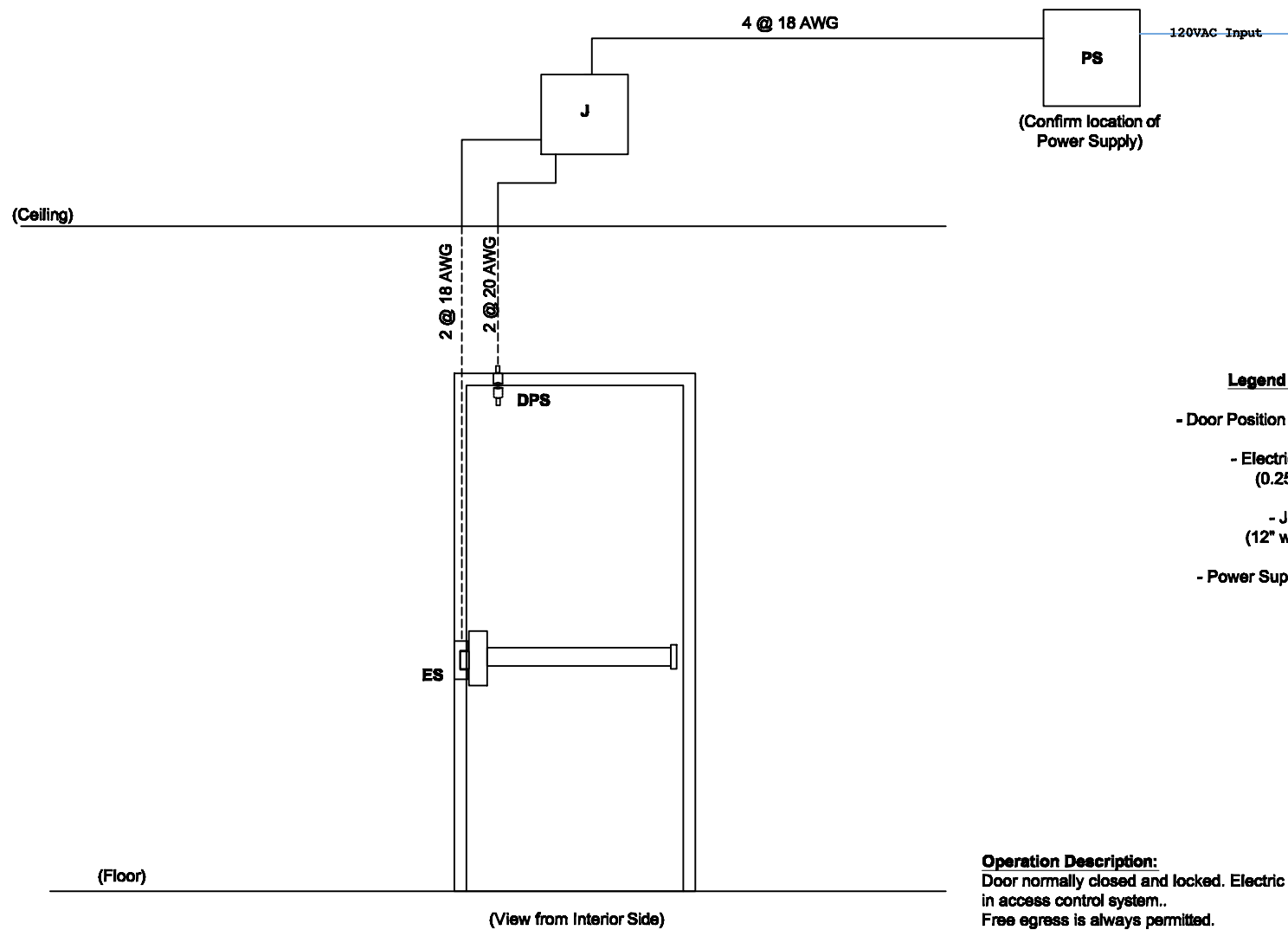


Project: Troy High School

Door 2222G

5/9/2014

Drawn By: Chuck
Westman



Legend of Components:

- DPS
- Door Position Switch model DPS-M-BK
- ES
- Electric Strike model 9600
(0.25A @ 24VDC)
- J
- Junction Box
(12" w x 12" h x 4" d)
- PS
- Power Supply (provided by Owner)

Operation Description:

Door normally closed and locked. Electric strike locked and unlocked by schedule in access control system..
Free egress is always permitted.

Project: Troy High School

Doors 2222D/E/F

5/9/2014

Drawn By: Chuck
Westman

GLAZING

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 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Windows.
 - 2. Doors.
 - 3. Storefront framing.
 - 4. Interior borrowed lites.
- B. Safety Glass Where Required: Meet or exceed applicable current requirements of ANSI Z97.1 "Safety Glazing" and CPSC 16 CFR, Category II.

1.3 DEFINITIONS

- A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations according to ASTM C 1036.
- C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.
- D. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.
- E. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
- F. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or

gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

- B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
 - a. Specified Design Wind Loads: Not less than wind loads applicable to Project as required by ASCE 7 "Minimum Design Loads for Buildings and Other Structures": Section 6.0 "Wind Loads."
 - b. Specified Design Snow Loads: Not less than snow loads applicable to Project as required by ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 7.0, "Snow Loads."
 - c. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch (25 mm), whichever is less.
 - 1) For monolithic-glass lites heat treated to resist wind loads.
 - 2) For insulating glass.
 - 3) For laminated-glass lites.
- C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 1/4 inch thick.
 2. For laminated-glass lites, properties are based on products of construction indicated.
 3. For insulating-glass units, properties are based on units with lites 1/4 inch thick and a nominal 1/2-inch- (12.7-mm-) wide interspace.
 4. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:
 - a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F (W/sq. m x K).
 - b. Solar Heat Gain Coefficient: NFRC 200.
 - c. Solar Optical Properties: NFRC 300.

1.5 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
 - 1. Samples:
 - 2. Each type and thickness of glass: three (3) samples, 12 inches square.
 - 3. Gaskets and Tapes: Three (3) samples, 6 inches long; each type and shape; molded corners for each type of gasket.
- B. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- C. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
- D. Qualification Data: For installers.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- B. Source Limitations for Glass: Obtain glass through one source from a single manufacturer for each glass type.
- C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.
- D. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.
- E. Glazing for Fire-Rated Window Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.
- F. Safety Glazing Products including wired glass: Comply with testing requirements in CPSC 16 CFR 1201, Category II and ANSI Z97.1.
 - 1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency or manufacturer acceptable to authorities having jurisdiction.
 - 2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. (0.84 sq. m) in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. (0.84 sq. m) or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.
- G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA Laminated Division's "Laminated Glass Design Guide" and GANA's "Glazing Manual."
 2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR-A7, "Sloped Glazing Guidelines."
 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Sloped Glazing Guidelines."
 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."
- H. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:
1. Insulating Glass Certification Council.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Primary Glass Manufacturers:
 - a. AFG Industries, Inc.
 - b. Guardian Industries, Inc.
 - c. Pilkington Building Products North America
 - d. PPG Industries, Inc.
 - e. Viracon

2.2 GLASS PRODUCTS

- A. Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality-Q3; of class indicated.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.

2. Heat Strengthened: Provide Kind HS (heat-strengthened) float glass in place of annealed float glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
 3. Tempered: Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated.
- C. Tinted Glass:
1. Product: Subject to compliance with requirements, provide Oceans of Color Collection as manufactured by PPG Industries, Inc. or equal by one of the above listed primary glass manufacturers
 2. Color: Solexia (light-green) and Solarban 60
 3. Comply with the following properties for one-inch insulating glass with Low-E Coating:
 - a. Visible Light Transmittance: 61%
 - b. Summer U-Value: 0.27
 - c. Winter U-Value: 0.29
 - d. Solar Heat Gain Coefficient: 0.32
 - e. Shading Coefficient: 0.37
- D. Laminated Glass: ASTM C 1172, and complying with other requirements specified and with the following:
1. Interlayer: Polyvinyl butyral of 0.060 inch thickness unless indicated otherwise with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.
 - a. For polyvinyl butyral interlayers, laminate lites in autoclave with heat plus pressure.
 2. Laminating Process: Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets.
- E. Wired Glass: ASTM C 1036, Type II (patterned and wired flat glass), Class 1 (clear), Quality-Q-6; and of form and mesh pattern specified.
1. UL label required on all lites.
 2. Comply with testing requirements in CPSC 16 CFR 1201, Category II.
- F. Insulating-Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article.
1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
 2. Provide Kind FT (fully tempered) glass lites where safety glass is indicated.
 3. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.

4. Sealing System: Dual seal, with primary and secondary sealants as follows:
 - a. Polyisobutylene and polysulfide or silicone.
 - 1) Silicone seal is required for all four sided or two sided structural glazing.
 5. Spacer Specifications: Manufacturer's standard spacer material and construction complying with the following requirements:
 - a. Spacer Material:
 - 1) Aluminum with mill or clear anodic finish for non-structurally glazed applications
 - 2) Aluminum with black, color anodic finish for structurally glazed applications.
 - b. Desiccant: Molecular sieve, silica gel, or blend of both.
 - c. Corner Construction: Manufacturer's standard corner construction.
- G. Low Emissivity-Coated Insulating Glass Units (Low-E): Manufacturer's standard unit with one pane coated with pyrolitic or sputtered, neutral colored, Low-E coating, on second surface of the insulating unit. See glass schedule for types and thicknesses.
1. Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or -nitride coating deposited by vacuum deposition process after manufacture and heat treatment (if any), and complying with other requirements specified.

2.3 FIRE-RATED GLAZING PRODUCTS

- A. Gel-Filled, Dual-Glazed Units: Proprietary Category II safety glazing product in the form of two lites of Condition A (uncoated surfaces), Type I (transparent flat glass), Class 1 (clear), Kind FT (fully tempered) float glass; with a perimeter metal spacer separating lites and dual-edge seal enclosing a cavity completely filled with clear, fully transparent, heat-absorbing gel.
1. Fire-Protection Rating: As indicated for the assembly in which glazing material is installed, and permanently labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
 2. Product: Subject to compliance with requirements, "SuperLite II XL" by SAFTI; a Division of O'Keeffe's Inc.

2.4 INSULATED METAL PANELS

- A. Insulated Metal Glazing Panels: Panels shall consist of a laminated sandwich of polyisocyanurate insulation core, 0.060 Polyallomer substrate and smooth aluminum skins 0.040" thick. The entire sandwich shall be bonded under heat and pressure with permanently elastic neoprene contact adhesive.
1. Panel Thickness: 1 inch unless indicated otherwise.
 2. Color: As selected by Architect from manufacturer's full range.
 3. Interior Finish: Manufacturer's standard prime coat.
 4. Manufacturer: Subject to compliance with requirements, provide Laminators Inc. "Thermo Lite" System or approved equal.
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum units.

1. Brackets not exposed to weather or abrasion may be hot-dip galvanized steel complying with ASTM A 386.
 2. Provide non-staining, nonferrous shims for installation and alignment of curtain wall work.
- C. Fasteners and Accessories: Provide manufacturer's standard non-corrosive fasteners and accessories compatible with materials used in the framing system and with exposed portions.

2.5 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 Glazing Tape: Tremco #440; Shore A hardness of 10 at installation and not exceeding 20 upon aging.

2.6 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, black, and of profile and hardness required to maintain watertight seal:
1. Silicone, ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets of material indicated below; complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:
1. Silicone.

2.7 GLAZING SEALANTS

- A. Sealant for Glazing: Meet requirements for materials and workmanship specified under Division 07 Section "Joint Sealants."
1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealants for Fire-Resistive Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Neoprene or EPDM 70 to 90 Shore A Hardness as recommended by manufacturer; certified non-staining and compatible with sealant. Use EPDM for units set with silicone glazing sealant.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.9 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Grind smooth and polish exposed glass edges and corners.
- C. Glazing Contractor, Glass Fabricator and Glass Manufacturer shall determine which areas require heat strengthening. The glazing contractor shall include in his bid and shall install heat strengthened glass where it is required by manufacturer and/or fabricator.

2.10 GLASS SCHEDULE

- A. Schedule of Glass Types:

- GL-1 Annealed Monolithic Glass:
Tint: Clear
Thickness: 1/4"
- GL-2 Tempered Monolithic Glass:
Tint: Clear
Thickness: 1/4"
- GL-3 Laminated Glass consisting of:
1/8" heat strengthened glass; clear
PVB interlayer; clear
1/8" heat strengthened glass; clear.
- GL-4 Laminated Insulating Glass consisting of:
Exterior Lite: 1/4" Laminated Glass
Tint: Solexia
Airspace: 1/2"
Interior Lite: 1/4" Laminated Glass
Tint: Clear.
Solarban 60 Coating: #2 Surface.
- GL-5 Wire Glass:
1/4" polished wired glass with 2 (M2) (Square) pattern.

- GL-6 Insulated Metal Panel
 Thickness: 1"
 Color: As selected by Architect from manufacturer's full range.
- GL-5 45-minute fire rated glass
 For use in 45 minute door and window applications. Basis of design is Superlite II-XL-45 as manufactured by SAFTI First, a division of O'Keeffe's Inc. (888) 653-3333/(415) 822-5222 fax. Or approved equals.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing glazing, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 2. Presence and functioning of weep system.
 3. Minimum required face or edge clearances.
 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
1. Install glass in accordance with recommendations outlined in "Glazing Manual" and "Glazing Sealing Systems Manual" prepared by Flat Glass Marketing Association.
- B. Interior glazing shall be dryset with black glazing tape.
- C. Exterior glazing at entrance doors, sidelights, transoms, window wall frames, and similar members shall be installed with dryset gasket glazing.
- D. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- E. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- F. Apply primers to joint surfaces where required for adhesion of sealants.

- G. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- H. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- I. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm) as follows:
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- J. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- K. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 GASKET GLAZING

- A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

- D. Install gaskets so they protrude past face of glazing stops.

3.6 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

****END OF SECTION****

GYPSUM WALLBOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Interior gypsum wallboard.
 - 2. Tile backing panels.
 - 3. Non-load-bearing steel framing.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood framing and furring.
 - 2. Division 09 Section "Painting" for painting.

1.3 DEFINITIONS

- A. Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 SYSTEM DESCRIPTION

- A. In order to be acceptable, the appearance of all exposed wallboard surfaces in finished locations, after painting, shall be equivalent, in the judgment of the Architect, to the appearance of painted putty coat plaster surfaces and as follows:
 - 1. The finish shall be equal to a Level 4 Finish as described in the current edition of the "Gypsum Construction Handbook" of the United States Gypsum Company.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.6 QUALITY ASSURANCE

- A. Comply with the provisions and recommendations of the United States Gypsum Company - "Gypsum Construction Handbook" (current edition) except where otherwise specified.
- B. Single-Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.
- C. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings and fire rated shaft-wall assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance-Rated Assemblies: Indicated by design designations from UL's "Fire Resistance Directory," GA-600, "Fire Resistance Design Manual," or of other testing agency acceptable to authorities having jurisdiction.
 - D. Sound Transmission Characteristics: For gypsum board assemblies and fire rated shaft-wall assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
 - B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.
 - C. Handle gypsum boards to prevent damage to edges, ends and surfaces. Do not bend or otherwise damage metal corner beads and trim.
- 1.8 PROJECT CONDITIONS
- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
 - B. Minimum Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40°F (4°C). For adhesive attachment and finishing of gypsum board maintain not less than 50°F (10°C) for 48 hours prior to application and continuously thereafter until drying is complete.
 - C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.
- 1.9 COORDINATION
- A. Make detailed inspection of all areas and surfaces to be covered.
 - B. Verify dimensions, details, partition schedule and relationship to other work.
 - C. Observe benchmarks and thickness of materials. Where diffusers or other accessories are mis-located notify installing trade with copy to the Architect.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 STEEL PARTITION AND SOFFIT FRAMING

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

1. Steel Framing and Furring:
 - a. ClarkDietrich Building Systems.
 - b. Marino\Ware.
 - c. Steel Stud Solutions, LLC.
 - d. MBA Metal Framing.
 - B. Components, General: As follows:
 1. Comply with ASTM C 754 for conditions indicated.
 2. Steel Sheet Components: Complying with ASTM C 645 requirements for metal and with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
 - C. Steel Studs and Runners: ASTM C 645.
 1. Minimum Base Metal Thickness: 0.0454 inch (1.15 mm).
 2. Depth: As indicated.
 - D. Deep-Leg Deflection Track: ASTM C 645 top runner with 2-inch- (50.8-mm-) deep flanges.
 - E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 1. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
 - F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 1. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
 2. Depth: As indicated.
 - G. Resilient Furring Channels: 1/2-inch- (12.7-mm-) deep, steel sheet members designed to reduce sound transmission.
 1. Configuration: Asymmetrical, with face attached to single flange by a slotted leg (web).
 - a. Product: U.S. Gypsum No. RC-1 or equal.
 - H. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (31.8 mm), wall attachment flange of 7/8 inch (22.2 mm), minimum bare metal thickness of 0.0179 inch (0.45 mm), and depth required to fit insulation thickness indicated.
 - I. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- 2.3 STEEL SUSPENDED CEILING AND SOFFIT FRAMING
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Steel Framing and Furring:
 - a. ClarkDietrich Building Systems.
 - b. Marino\Ware.
 - c. Steel Stud Solutions, LLC.

- d. MBA Metal Framing.
- B. Components, General: Comply with ASTM C 754 for conditions indicated.
- C. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- D. Hanger Attachments to Concrete: As follows:
 - 1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching hanger wires and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by a qualified independent testing agency.
 - a. Type: Cast-in-place anchor, designed for attachment to concrete forms, postinstalled, chemical anchor, or postinstalled, expansion anchor.
 - 2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by a qualified independent testing agency.
- E. Hangers: As follows:
 - 1. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch (4.12-mm) diameter.
- F. Carrying Channels: Cold-rolled, commercial-steel sheet with a base metal thickness of 0.0538 inch (1.37 mm), a minimum 1/2-inch- (12.7-mm-) wide flange, with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
 - 1. Depth: Minimum 2 inches (50.8 mm) unless otherwise indicated.
- G. Furring Channels (Furring Members): Commercial-steel sheet with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
 - 1. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22.2 mm) deep.
 - a. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
 - 2. Resilient Furring Channels: 1/2-inch- (12.7-mm-) deep members designed to reduce sound transmission.
 - a. Configuration: Asymmetrical or hat shaped, with face attached to single flange by a slotted leg (web) or attached to two flanges by slotted or expanded metal legs.

2.4 WALLBOARD

- A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Gypsum Wallboard: Gypsum core wall panel surfaced with a natural-finish face paper on front and a liner paper on back. Comply with ASTM C36 and the following:
 - 1. Type X:

- a. Thickness: 5/8 inch (15.9 mm).
 - b. Long Edges: Tapered.
 - c. Location: As indicated and at Vestibule Ceiling.
2. Products: Subject to compliance with requirements, provide one of the following:
- a. CertainTeed Inc., ProRoc products.
 - b. Georgia-Pacific Corp., ToughRock Gypsum Board products.
 - c. National Gypsum Company, Gold Bond Brand products.
 - d. United States Gypsum Co., Sheetrock Brand Gypsum products.
- C. Abuse-Resistant Gypsum Wallboard: ASTM C 36, manufactured to produce greater resistance to surface indentation and through-penetration than standard gypsum panels.
1. Abuse-Resistant Gypsum Wallboard: Provide one of the following:
- a. Gypsum core wall panel surfaced with heavy abrasion-resistant paper on front and a heavy liner paper on back.
 - 1) Type: X
 - 2) Thickness: 5/8 inch (15.9 mm).
 - 3) Long Edges: Tapered.
 - 4) Location: As indicated and at Sound Console Enclosure Walls
 - 5) Products: Subject to compliance with requirements, provide one of the following:
 - a) Georgia-Pacific Corp., ToughRock Abuse-Resistant Gypsum Board.
 - b) National Gypsum Company, Hi-Abuse XP Brand Wallboard.
 - c) United States Gypsum Co., Sheetrock Brand Abuse-Resistant Gypsum Panels.
 - b. Gypsum fiber reinforced wall panels with face paper.
 - 1) Type: X.
 - 2) Thickness: 5/8 inch (15.9 mm).
 - 3) Long Edges: Tapered.
 - 4) Location: As indicated.
 - 5) Products: Subject to compliance with requirements, provide CertainTeed Inc., ProRoc Brand - Abuse Resistant.

2.5 TILE BACKING PANELS

- A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Cementitious Backer Units (Cement Board): ANSI A118.9.
1. Thickness: As indicated.
2. Products: Subject to compliance with requirements, provide one of the following:
- a. National Gypsum Co., PermaBase Cement Board.
 - b. United States Gypsum Co., Durock Cement Board

2.6 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:
 - a. Cornerbead: Use at outside corners.
 - 1) Product: U.S. Gypsum No. 103 Dur-A-Bead or equal.
 - b. LC-Bead (Casing Bead): J-shaped; exposed long flange receives joint compound; use at exposed panel edges and where indicated.
 - 1) Product: U.S. Gypsum No. 200-A Metal Trim or equal.
 - c. L-Bead (Casing Bead): L-shaped; exposed long leg receives joint compound; use where indicated.
 - 1) Product: U.S. Gypsum No. 200-B Metal Trim or equal.
 - d. Control Joint: Use at control joint locations in walls, ceilings, bulkheads, fasciae and soffits:
 - e.
 - 1) Product: U.S. Gypsum No. 093 Control Joint, or equal.
 - 2) Back to back casing beads may be used in lieu of prefabricated control joint trim. Provide backer and sealant to finish opening between beads as with materials appropriate to conditions of installation.

2.7 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound or drying-type, all-purpose compound.
3. Fill Coat: For second coat, use setting-type, sandable topping compound or drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound or drying-type, all-purpose compound.

D. Joint Compound for Tile Backing Panels:

1. Cementitious Backer Units: As recommended by manufacturer.

2.8 ACOUSTICAL SEALANT

A. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), recommended for sealing interior concealed joints to reduce airborne sound transmission.

B. Products: Subject to compliance with requirements, provide the following:

1. Acoustical Sealant for Concealed Joints:
 - a. Tremco, Inc.; Tremco Acoustical Sealant.

2.9 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to cold formed metal framing and steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

C. Isolation Strip at Exterior Walls:

1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
2. Density: 2.5 pounds per cubic foot.
3. Thickness: 3 inches unless indicated otherwise on the drawings
4. Products: Subject to compliance with requirements, provide the following:
 - a. Thermafiber Sound Attenuation Fire Blankets as manufactured by United States Gypsum Co.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Suspended Ceilings: Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers at spacing required to support ceilings and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
 - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed-on fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (600 mm) o.c.
 - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of gypsum board assemblies and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
- C. Control Joint Layout: Prior to commencement of framing installation submit coordination drawings indicating proposed control joint locations in metal-framed gypsum board partitions, walls, ceilings, bulkheads, fasciae and soffits, for review and acceptance of Architect.

3.3 INSTALLING STEEL FRAMING, GENERAL

- A. Installation Standards: ASTM C 754, and ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations or, if none available, with United States Gypsum's "Gypsum Construction Handbook."
- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement.
 - 1. Isolate ceiling assemblies where they abut or are penetrated by building structure.
 - 2. Isolate partition framing and wall furring where it abuts structure, except at floor. Install slip-type joints at head of assemblies that avoid axial loading of assembly and laterally support assembly.
 - a. Use deep-leg deflection track where indicated.

- D. Do not bridge building control and expansion joints with steel framing or furring members. Frame both sides of joints independently.
- E. General requirements and locations of control joints in metal-framed gypsum board construction:
 - 1. General: Comply with requirements of ASTM C840, and as noted below:
 - 2. Control joints shall be constructed with manufactured control joint trim, or field fabricated from materials as specified.
 - 3. Control joints will be installed where a partition, wall, or ceiling traverses and construction joint (expansion, or building control element) in the base building structure.
 - 4. Control joints will be installed where a wall or partition extends in an uninterrupted straight plane exceeding 30 linear feet. Door and/or window frames that extend full height of partitions will be considered equivalent to control joint construction.
 - 5. Control joints in interior ceilings, bulkheads, fasciae and soffits will be installed so that linear dimensions between control joints do not exceed 30 linear feet and total area between control joints does not exceed 900 square feet. Control joints will be installed to isolate wings of "L", "U" and "T" shaped ceiling and soffit areas.
 - 6. A control joint will be installed where ceiling, bulkhead, fascia and soffit framing members change direction.
 - 7. Provide appropriate backing material, fire-safing insulation, and sealant for control joints installed in acoustical or fire-rated construction, as required to maintain fire-rating and/or acoustical separation.
- F. All mechanical heating and cooling system components shall be independently supported; not supported by gypsum board framing system.
- G. Provide gypsum panel bulkheads and closures where ducts penetrate fire separations.

3.4 INSTALLING STEEL PARTITION AND SOFFIT FRAMING

- A. Install tracks (runners) at floors, ceilings, and structural walls and columns where gypsum board assemblies abut other construction.
 - 1. Where studs are installed directly against exterior walls, install foam-gasket isolation strip between studs and wall.
 - 2. Anchor tracks 24 inches o.c. with not less than two fasteners per section.
 - a. Review electrical conduit layout in slab, avoid penetration of conduits running directly below walls.
 - 3. Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.
 - 4. Allow for differential movement between floors and at roofs by use of nested runners unless otherwise noted.
- B. Installation Tolerance: Install each steel framing and furring member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by the faces of adjacent framing.

- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
 - 1. For fire-resistance-rated and STC-rated partitions that extend to the underside of floor/roof slabs and decks or other continuous solid-structure surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed to support gypsum board closures and to make partitions continuous from floor to underside of solid structure.
 - 2. Metal studs which cannot extend full height to structure above, due to interference with ductwork and the like, shall be tied to cross stiffening, or diagonal bracing to structure above.
 - 3. Terminate partition framing at suspended ceilings where indicated.
 - 4. Interrupt metal framing (including top and bottom tracks) with a 1/2-inch gap at all control joint locations. Provide back to back studs and or framing for each control joint flange. Provide appropriate backing material, fire-safing insulation, and sealant for control joints installed in acoustical or fire-rated construction, as required to maintain fire-rating and/or acoustical separation.
- D. Install supplementary framing, blocking, backing plates and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work.
- E. Install steel studs and furring at the following spacings:
 - 1. Single-Layer Construction: 16 inches (406 mm) o.c., unless otherwise indicated.
 - 2. Cementitious Backer Units: 16 inches (406 mm) o.c., unless otherwise indicated.
- F. Install horizontal stiffeners in stud system, spaced (vertical distance) not more than 4'-6" o.c. Weld at each intersection.
- G. Install steel studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edges of stud flanges first.
- H. Frame door openings to comply with GA-600 and with gypsum board manufacturer's applicable written recommendations, unless otherwise indicated. Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - 1. Install two studs at each jamb, unless otherwise indicated.
 - 2. Extend jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- I. Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
- J. Z-Furring Members:
 - 1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c.

2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (600 mm) o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (300 mm) from corner and cut insulation to fit.

3.5 INSTALLING STEEL SUSPENDED CEILING AND SOFFIT FRAMING

- A. All ceiling construction shall be fully "unrestrained". Interrupt main runners, furring, or wallboard ceilings at walls of all full sized rooms as required to accommodate building movement. Use appropriate trim pieces to accomplish the work.
 1. Cut furring, reinforce, support, and fit for electric outlet boxes, recessed fixtures, grilles and similar items.
 2. Provide allowance for anticipated building movement between floors and ceilings or soffits.
- B. Suspend ceiling hangers from building structure as follows:
 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - a. Do not support ceilings directly from permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 - b. Do not attach hangers to steel deck tabs.
 - c. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - d. Do not connect or suspend steel framing from ducts, pipes, or conduit.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
 3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.
- C. Tie carrying channels to hangers with single (only) wrap of wire to avoid lifting channel.
- D. Installation Tolerances: Install steel framing components for suspended ceilings so members for panel attachment are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member and transversely between parallel members.
- E. Wire-tie furring channels to supports, as required to comply with requirements for assemblies indicated.
 1. Saddle tie furring channels to carrying channels with double strand tie wires.
 2. Screw furring to wood framing.

- F. Install suspended steel framing components in sizes and spacings indicated, but not less than that required by the referenced steel framing and installation standards.

1. Hangers: 48 inches (1219 mm) o.c.
2. Carrying Channels (Main Runners): 48 inches (1219 mm) o.c.
3. Furring Channels (Furring Members): 16 inches (406 mm) o.c.

3.6 APPLYING AND FINISHING PANELS, GENERAL

- A. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.
- B. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.
- C. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- F. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- G. Attach gypsum panels to framing provided at openings and cutouts.
- H. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members using resilient channels, or provide control joints to counteract wood shrinkage.
- I. Form control and expansion joints with space between edges of adjoining gypsum panels.
- J. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 2. Fit gypsum panels around ducts, pipes, and conduits.
 3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.
- K. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim

edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

- L. Hold gypsum panels free from all surfaces subject to condensation or moisture.
- M. Floating Construction: Where feasible, including where recommended in writing by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.
- N. STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- O. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.
- P. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.

3.7 PANEL APPLICATION METHODS

- A. General:
 - 1. Plenum wall, ceiling drops, skirts or baffles that are beyond reach of user or occupant are to be constructed to meet L/120 deflection criteria.
 - 2. Partitions, ceiling drops, baffles or other assemblies within user or occupant contact or with painted or vinyl finishes or that some vibration or movement is not detrimental to perceived structural integrity shall be constructed to meet L/240 deflection criteria.
 - 3. Partitions, or assemblies where finish is a rigid veneer, such as plaster, skim coat, tile or stone work or mounted mirror or any use that would be compromised by vibration or deflection shall be constructed to meet L/360 deflection criteria.
 - 4. Do not proceed with work until temperature and humidity of building meet requirements of manufacturer's standard specifications.
 - 5. Fastening system shall be power driven drywall screws. Where hand driven fasteners are used, double nailing will be required.
 - 6. Set all nails and screws to slightly dimple, but not break surface of board. Space nails 6 to 8 inches, 3/8 inch from edges, staggered at joints; double spacing for screws.
 - 7. Repair areas scarified or otherwise damaged by cutting out damaged areas, back blocking set with adhesive, and patching with patching plaster.
 - 8. Grout anchors for door frames. Jamb board into door frame to provide rigidity. Full grout frames at label doors, shaftwall, and elsewhere as indicated.
 - 9. Metal studs with finish one side are to receive stiffener channels at no more than 4'-6" maximum spacing.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

C. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.

D. Tile Backing Panels:

1. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.
 - a. Where indicated install standard gypsum wallboard panels to produce a flat surface at tiled areas not subject to wetting.
2. Examine framing; verify that framing and furring members to receive cement board has a maximum spacing of 16" o.c. and is minimum 20 gauge with a maximum deflection of L/360.
3. Install cement board in accordance with manufacturer's instructions.
 - a. Install cement board with rough side out.
 - b. Use maximum lengths possible to minimize number of joints.
4. Attach cement board to framing with screws spaced 8" o. c. at perimeter where there are framing supports, and 8" o. c. along intermediate framing in field.
 - a. Drive fasteners to bear tight against and flush with surface of cement board. Do not countersink. Locate fasteners minimum 3/8" from edges and ends of cement board.
5. Where tile backing panels abut other types of panels in the same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.8 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations specified and per reviewed Coordination Drawings, subject to Architect's approval. Install control joint trim in accordance with manufacturer's recommendations.
- C. All aluminum in contact with joint compound shall have contact faces treated with zinc chromate primer.

3.9 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
 - 1. Apply perforated tape and compound at all joints, at inside corner and as required to conceal all fasteners and finish off all trim. Protect outside corners with corner beads.
 - 2. Finished appearance shall be perfectly smooth so that, after painting, there shall be no evidence of taping or patching. Areas where the location of joints or fasteners may be determined by visual inspection due to bulges, irregularities in surface of variations in texture, will be considered defective.
 - 3. If dry-out or over-sanding of finish coat of compound leaves surface requiring special treatment or sealing, provide such sealer or treatment and leave entire surface acceptable to the finishing trades as specified under Division 9 Section "Painting."
 - 4. Repair all nail pops, wrinkles, buckles and other defects occurring during the Guarantee period and make good all damage to other work resulting from such repairs.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:
 - 1. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges.
- E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.10 PATCHING AND REPAIRS

- A. Prior to start of painting or installation of wall covering, neatly and accurately patch and repair all damaged wallboard to match finish of adjoining work. Cut out cracks, damaged areas, blemished, defective portions and re-work to match adjacent area.
- B. Apply chemical treatment where required to remedy defects.
- C. After sizing and seal coats have been applied, as specified under Division 9 Section "Painting," patch and repair any hair cracks or fine cracks which become visible, as necessary to render finish painting free from visible cracks.

3.11 CLEAN UP

- A. Upon completion of the work, in each area, brush all surfaces clean including floors, ledges and other areas carrying droppings or debris resulting from the work.
- B. Upon completion of work in any area or as often as directed, remove from the premises and legally dispose of all surplus materials, and construction debris.
- C. Do not bury lime or gypsum materials on the site.

****END OF SECTION****

TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Porcelain Wall Tile
 - 2. Metal Edge Strips
- B. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
 - 2. Division 09 Section "Gypsum Wallboard Assemblies" for cementitious backer units installed as part of gypsum wallboard systems.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product data for each type of product specified.
- C. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.
- D. Samples for verification purposes of each item listed below, prepared on samples of size and construction indicated, products involve color and texture variations, in sets showing full range of variations expected.
 - 1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on plywood or hardboard backing and grouted.
 - 2. Full-size units of each type of trim and accessory for each color required.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

- C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 01.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.
- B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.
- C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at 50°F (10°C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.7 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Tile: Subject to compliance with requirements, provide products as follows:
 - 1. CT1:
 - Daltile
 - Porcelain Tile
 - Plaza Nova
 - Thickness: 3/8"
 - Color: White Image PN94
 - Size: 4" x 24"
 - Grout Joint: 1/8"

Manufacturer's Representative: Erin Leszczynski (586)612-6838

2. CT2:
Daltile
Porcelain Tile
Plaza Nova
Color: Black Shadow PN99
CT2A: 2" x 24"
CT2B: 4" x 24"
Grout Joint: 1/8"

Manufacturer's Representative: Erin Leszczynski (586)612-6838

2.2 PRODUCTS, GENERAL

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
 1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
 1. Provide selections made by Architect from manufacturer's full range of colors, textures, and patterns as indicated for each product.
 2. Provide tile trim and accessories that match color and finish of adjoining flat tile.
- D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.
- E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TRIM UNITS:

- A. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
 1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
 2. Shapes: As selected by Architect from manufacturer's standard shapes, and as necessary for a complete installation.

2.4 SETTING MATERIALS

- A. Latex-Portland Cement Mortar: ANSI A118.4, composition as follows:
 1. Latex additive (water emulsion) of type described below, serving as replacement for part or all of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.

- a. Latex Type: Manufacturer's standard.

2.5 GROUTING MATERIALS

- A. Latex-Portland Cement Grout: ANSI A118.6, color as indicated, composition as follows:
 - 1. Latex additive (water emulsion) serving as replacement for part or all of gauging water, added at job site with dry grout mixture, with type of latex and dry grout mix as follows:
 - a. Latex Type: Manufacturer's standard.
 - b. Dry Grout Mixture: Grout shall be as manufactured by one of the following:
 - 1) Custom Building Products.
 - 2) H. B. Fuller Co.
 - 3) LATICRETE International Inc.
 - 4) MAPEI Corporation.
 - 5) Summitville Tiles, Inc.
 - 6) TEC Specialty Products Inc.
 - c. Grout shall be colored as selected by Architect from manufacturer's full line of colors.

2.6 MISCELLANEOUS MATERIALS

- A. Metal Edge Stripsat CT1, CT2A and CT2B
Schluter Systems
RONDEC
Finish: Stainless Steel
Size: Compatible with CT1, CT2A and CT2B

Manufacturer's Representative: Kathleen Somervell (248)467-4362

2.7 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.
 - B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.
 - C. Where indicated, install anti-fracture membrane to comply with manufacturer's written instructions to produce a membrane of uniform thickness bonded securely to substrate.
 - D. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
 - E. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
 - F. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.
 - G. Lay out tile wainscots to dimensions indicated.
 - H. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 - I. Grout tile to comply with the requirements of the following installation standards:
 - 1. For ceramic tile grouts (and latex-portland cement grouts), comply with ANSI A108.10.
 - 2. For chemical-resistant epoxy grouts, comply with ANSI A108.6.
- 3.4 FLOOR INSTALLATION METHODS
- A. Ceramic Mosaic Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types:
 - 1. Latex-Portland Cement Mortar: ANSI A108.5.

- a. Concrete Subfloors, Interior: TCA 125A or as indicated on Drawings.
 - 1) Install anti-fracture membrane at all locations unless indicated otherwise.
 - b. Grout: Latex-portland cement.
 - 1) Provide epoxy grout where noted in specifications and where indicated on Drawings.
- B. Quarry Tile: Install tile to comply with requirements indicated below for setting-bed method, TCA installation method related to type of subfloor construction, and grout type:
- 1. Latex-Portland Cement Mortar: ANSI A108.5.
 - a. Concrete Subfloor, Interior: TCA F113 or as indicated on drawings.
 - 1) Install anti-fracture membrane at all locations unless indicated otherwise.
 - b. Grout: Latex-portland cement.
 - 1) Provide epoxy grout where indicated on Drawings.
 - C. Thresholds: Install synthetic thresholds at locations indicated; set in same type of setting bed as abutting field tile unless otherwise indicated.
 - 1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.
 - D. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.
- 3.5 CRACK ISOLATION MEMBRANE INSTALLATION
- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.
- 3.6 WALL TILE INSTALLATION METHODS
- A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions, and grout types:
 - 1. Latex-Portland Cement Mortar: ANSI A108.5.
 - a. Masonry, Interior: TCA W202.
 - b. Cementitious Backer Units, Interior: TCA W244.
 - c. Grout: Latex-portland cement.
 - 1) Provide epoxy grout where indicated on Drawings.
- 3.7 CLEANING AND PROTECTION
- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove latex-portland cement grout residue from tile as soon as possible.

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2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
 3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
- C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
 2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

****END OF SECTION****

RESILIENT FLOORING ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK:

- A. Extent of resilient tile flooring and accessories is shown on drawings and in schedules.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Provide each type of resilient tile flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory.
- B. Samples for Verification Purposes: Submit the following samples of each type, color, and pattern of resilient tile flooring required, showing full-range of color and pattern variations.
 - 1. 2-1/2 foot long samples of resilient flooring accessories.
 - 2. Other materials as requested.
- C. Certification for Fire Test Performance: Submit certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient tile flooring complies with fire test performance requirements.
- D. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient tile flooring and accessory required.

1.5 PROJECT CONDITIONS

- A. Maintain minimum temperature of 65°F (18°C) in spaces to receive resilient tile flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55°F (13°C) in areas where work is completed.
- B. Install resilient tile flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

1.6 EXTRA STOCK:

- A. Deliver stock of maintenance materials to Owner. Furnish maintenance materials from same manufactured lot as materials installed and enclosed in protective packaging with appropriate identifying labels.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Resilient Wall Base: Subject to compliance with requirements provide products as follows:

1. RB1 Provide the following:
 - a. Johnsonite
Rubber Wall Base
Height: 4"
Color: 29 Moon Rock

2.2 ACCESSORIES

- A. Rubber Wall Base: Provide rubber base complying with FS SS-W-40, Type I, with matching end stops and preformed or molded corner units, and as follows:

1. Height: 4".
2. Thickness: 1/8" gage.
3. Style: Standard top-set cove. Finish: Matte.

- B. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, as selected by Architect from standard colors available; not less than 1" wide.

- C. Resilient Stair Nosings: Provide PVC resilient stair nosings with 2" co-extruded visually impaired inserts. Nosings shall be of style suitable for use indicated, complying with FS RR-T-650, and as follows:

1. Nosings: Johnsonite
Flexible Vinyl Stair Nosing
Model No.: PI-VIVCD-XX
Nosing Color: 29 Moon Rock
Insert Color: Photo-luminescent

Call manufacturer's representative for specific installation instructions relating to the use of epoxy nose caulk.

Contact Jim Hagood at (734)260-2177

2. Nosings (Concrete-to-Concrete): Johnsonite
Flexible Vinyl Stair Nosing
Model No.: PI-VITSN-XX
Nosing Color: 29 Moon Rock
Insert Color: Photo-luminescent

Call manufacturer's representative for specific installation instructions relating to

the use of epoxy nose caulk.

Contact Jim Hagood at (734)260-2177

- 3. Finish: Matte
- 4. Nosings shall be adhered and attached to concrete in strict accordance with manufacturer's written installation recommendations.
- D. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
- E. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
- F. Leveling and Patching Compounds: Latex type as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Require Installer to inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is defined as one that is smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing performance or appearance.
- B. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds.
- C. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

3.2 PREPARATION

- A. Prepare subfloor surfaces as follows:
 - 1. Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.
 - 2. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.
- B. Broom clean or vacuum surfaces to be covered, and inspect subfloor.
- C. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.3 INSTALLATION, GENERAL:

- A. Where movable partitions are shown, install resilient flooring before partitions are erected.
- B. Install resilient flooring using method indicated in strict compliance with manufacturer's printed instructions. Extend resilient flooring into toe spaces, door reveals, and into closets and similar openings.
- C. Scribe, cut, and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

- D. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
- E. Install resilient flooring on covers for telephone and electrical ducts, and similar items occurring within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
- F. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

3.4 INSTALLATION OF ACCESSORIES:

- A. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practical, with preformed outside corner units, and fabricated with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
 - 1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
- B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.5 CLEANING AND PROTECTION:

- A. Perform following operations immediately upon completion of resilient flooring:
 - 1. Sweep or vacuum floor thoroughly.
 - 2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive.
 - 3. Damp-mop floor being careful to remove black marks and excessive soil.
 - 4. Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.
- B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.
 - 1. Apply protective floor polish to resilient flooring surfaces free from soil, excess adhesive or surface blemishes. Use commercial available metal cross-linked acrylic product acceptable to resilient flooring manufacturer.
 - 2. Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary equipment or furnishings across floors.
 - 3. Cover resilient flooring with undyed, untreated building paper until inspection for substantial completion.

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- C. Clean resilient flooring not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.
1. Strip protective floor polish, which was applied after completion of installation, prior to cleaning.
 2. Reapply floor polish after cleaning.

****END OF SECTION****

DIRECT GLUE-DOWN CARPET

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes carpet, installation, and accessories.
- B. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 09 Section "Resilient Flooring Accessories" for resilient wall base, resilient stair nosings, and accessories installed with carpet.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product Data: Submit manufacturer's technical product data for each type of carpet specified to verify compliance with specification.
- C. Shop Drawings: Prior to ordering of carpet, provide shop drawings showing layout and seaming diagrams. Indicate pile or pattern direction and locations and types of edge strips. Indicate columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet. Show installation details at special conditions.
- D. SAMPLES:
 - 1. For verification purposes of each carpet specified.
 - 2. For verification purposes of any edge strips to be used.

1.4 QUALITY ASSURANCE

- A. Carpet Surface Burning Characteristics: Provide written data, if requested, for the following fire performance characteristics, per test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction.
 - 1. Test Method: DOC-FF-1-70 Pill Test
 - a. Rating: Pass
 - 2. Test Method: Floor Radiant Panel
 - a. Rating: Greater than 0.45 watts/cm2 - Class I when tested under ASTM E-648 glue down.

3. Test Method: NBS Smoke Chamber

- a. Rating: NFPA-258 (450 or less) Flaming Mode.

- B. Carpet Contractor shall arrange to have the carpet mill representative at the job site at the second day of the carpet installation to insure that proper installation methods are being used.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- B. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, blocked off ground. Maintain minimum temperature of 68 deg F (20 deg C) at least three days prior to and during installation in area where materials are stored.

1.6 PROJECT CONDITIONS

- A. Substrate Conditions: No condensation within 48 hours on underside of 4-foot by 4-foot polyethylene sheet, fully taped at perimeter to substrate.
- B. Substrate Conditions: pH of 9 or less when substrate wetted with potable water and pHydron paper applied.

1.7 CONTRACTOR TURNOVER REQUIREMENTS

- A. Warranty: Provide copies of manufacturer's warranty for each product used.
- B. Maintenance: Provide maintenance data consisting of manufacturer's printed instructions for each carpet used. Include methods and frequency of recommended cleaning as well as any precautions.
- C. Replacement Materials: Before installation begins, provide to Owner a full width quantity equal to 5 percent of the amount to be installed for each specified carpet.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Provide the following carpet:
1. CPT1
Manufacturer: Shaw Contract Group
Style: Glow 5A020
Construction: Multi-Level Pattern Cut/Loop
Fiber: Eco Solution Q Nylon
Dye Method: 100% Solution Dyed
Gauge: 1/10
Tufted Weight: 34.0
Total Thickness: 0.336 inches
Average Density: 6652
Width: 12'
Backing: EcoWorx
Color: Cerulean 13485
Manufacturer's Representative: Drew Pennington (248) 310-9031

2.2 ACCESSORIES

- A. Carpet Edge Guard: Extruded or molded heavy-duty vinyl or rubber of size and profile indicated; minimum 2-inch-wide anchorage flange; manufacturer's standard colors.
- B. Seaming Cement: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.
- C. Carpet Adhesive: Water resistant and non-staining as recommended by carpet manufacturer to comply with flammability requirements for installed carpet.

PART 3 - EXECUTION

3.1 PREPARATION OF NEW CONCRETE SUBSTRATE

- A. Clear away debris and scrape up cementitious deposits from concrete surfaces to receive carpet; apply sealer to prevent dusting.

3.2 PREPARATION OF EXISTING CONCRETE SUBSTRATE

- A. Patch holes and level to a smooth surface. If previous finish was chemically stripped, reseal the concrete. Seal powdery or porous surfaces with sealer recommended by the carpet manufacturer.

3.3 INSTALLATION

- A. Comply with manufacturer's recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position; do not place seams perpendicular to door frame, in direction of traffic through doorway. Do not bridge building expansion joints with continuous carpet.
- B. Carpet side seams shall be no closer than 11' apart. Cross seams shall be limited to a minimum number, one no closer than 12' from another within a space. All cross seam locations subject to Architect's approval.
- C. Extend carpet under removable flanges and furnishings and into alcoves and closets of each space.
- D. Provide cutouts where required, and bind cut edges where not concealed by protective edge guards or overlapping flanges.
- E. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate.
- F. Fit sections of carpet prior to application of adhesive. Trim edges and butt cuts with seaming cement.
- G. Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt edges tight to form seams without gaps. Roll entire area lightly to eliminate air pockets and ensure uniform bond.

3.4 CLEANING

- A. Remove adhesive from carpet surface with manufacturer's recommended cleaning agent.

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- B. Remove and dispose of debris and unusable scraps. Vacuum with commercial machine with face-beater element. Remove soil. Replace carpet where soil cannot be removed. Remove protruding face yarn.
- C. Vacuum carpet.

3.5 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, to ensure carpet is not damaged or deteriorated at time of Substantial Completion.

****END OF SECTION****

CARPET TILE

PART 1 - GENERAL

1.1 RELATED SECTIONS

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

1.2 SUMMARY

- A. This Section includes carpet tile, installation, and accessories.
- B. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 09 Section "Direct Glue Down Carpet" for materials, accessories, and installation.
 - 2. Division 09 Section "Resilient Flooring Accessories" for resilient wall base, resilient stair nosings, and accessories installed with carpet.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product Data: Submit manufacturer's technical product data for each type of carpet tile specified to verify compliance with specifications.
- C. Shop Drawings: Provide shop drawings showing layout and placement of cut tiles. Indicate pile or pattern direction, start points, and locations and types of edge strips. Indicate columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tile. Show installation details at special conditions.
- D. SAMPLES:
 - 1. For verification purposes of each carpet tile specified.
 - 2. For verification purposes of any edge strips to be used.

1.4 QUALITY ASSURANCE

- A. Carpet Tile Surface Burning Characteristics: Provide written data, if requested, for the following fire performance characteristics, per test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify carpet tile with appropriate markings of applicable testing and inspecting organization.
 - 1. Test Method: DOC FF 1-70. Pill Test
 - 2. Rating: Pass.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- B. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Lay flat,

blocked off ground. Maintain minimum temperature of 68 deg F (20 deg C) at least three days prior to and during installation in area where materials are stored.

1.6 PROJECT CONDITIONS

- A. Substrate Conditions: No condensation on underside of 4-foot by 4-foot polyethylene sheet within 48 hours, fully taped at perimeter to substrate.
- B. Substrate Conditions: pH of 9 or less when substrate wetted with potable water and pHydron paper applied.

1.7 CONTRACTOR TURNOVER REQUIREMENTS

- A. Warranty: Provide copies of manufacturer's warranty for each product used.
- B. Maintenance: Provide maintenance data consisting of manufacturer's printed instructions for each carpet tile used. Include methods and frequency of recommended cleaning as well as any precautions.
- C. Replacement Materials: Before installation begins, provide to Owner a quantity of material in full size units equal to 2 percent of the amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Provide the following Carpet Tile:

- 1. CPT2
Manufacturer: Interface
Style: Entry Level 129017187
Construction: Tufted Textured Loop
Fiber: Type 6,6 Nylon
Dye Method: 100% Solution Dyed
Gauge: 1/12
Total Thickness: .032 inches
Size: 50 cm x 50 cm
Backing: GlasBac Tile
Installation Method: Non-Directional
Color: Black

Manufacturer's Representative: Cara Bogosian (248)214-2707

2.2 ACCESSORIES

- A. Carpet Edge Guard: Extruded or molded heavy-duty vinyl or rubber of size and profile indicated; minimum 2-inch-wide anchorage flange; manufacturer's standard colors.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 PREPARATION

- A. If substrate is new concrete, clear away debris and scrape up cementitious deposits from concrete surfaces to receive carpet tile; apply sealer to prevent dusting.

- B. If the substrate is existing concrete, patch holes and level to a smooth surface. If previous finish was chemically stripped, reseal concrete. Seal powdery or porous surfaces with sealer recommended by carpet tile manufacturer.
- C. If the substrate is wood, patch holes and cracks. Sand to level. Remove wax. Seal surface with sealer recommended by carpet tile manufacturer.
- D. If the substrate is resilient flooring, replace missing pieces of existing resilient flooring or patch to level. Cut out peaked sheet goods seams and fill with latex underlayment.
- E. If the substrate is terrazzo, remove chemical finish on terrazzo; patch grout lines and cracks to level with latex underlayment.

3.2 INSTALLATION

- A. Comply with manufacturer's recommendations for a "Glue down" installation of carpet tile; maintain uniformity of carpet direction and lay of pile, unless otherwise indicated.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Extend carpet tile under removable flanges and furnishings and into alcoves and closets of each space.
- D. Install carpet edge guard where edge of carpet tile is exposed; anchor guards to substrate.
- E. Install with pattern parallel to walls and borders. Perimeter modules shall be half-size or larger.

3.3 CLEANING

- A. Remove any tape or adhesive from carpet tile surface with manufacturer's recommended cleaning agent.
- B. Remove and dispose of debris and unusable scraps. Vacuum using commercial machine with face-beater element. Remove soil. Replace carpet tiles where soil cannot be removed. Remove protruding face yarn.
- C. Vacuum carpet tile.

3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, to ensure carpet tile is not damaged or deteriorated at time of Substantial Completion.

****END OF SECTION****

PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes, labor, materials and equipment for Painting and Finishing.
- B. The following sections contain requirements that relate to this Section:
 - 1. Division 06 Section "Interior Architectural Woodwork" for factory finished millwork.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
 - 1. Submit 8-1/2 x 11 color downs on heavy paper to match Architect's color chips for each color and type of paint specified for Architect's approval.
 - a. Architect will furnish a schedule after beginning of construction. The schedule will include color chips for matching.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Material Certificates: For scrub resistance and washability, signed by manufacturers.

1.4 QUALITY ASSURANCE

- A. Architect has the option of requesting test patches in place for Architect's approval of final color and finish.
 - 1. Notify Architect 48 hours in advance of the time the test patches will be ready for inspection.
- B. Manufacturer shall certify that tests have been performed on semi-gloss wall finish and others as selected by the Architect. Acceptance of materials is conditional upon demonstration of washability and abrasion resistance of test patches. Testing shall include the following:
 - 1. Scrub resistance per ASTM D2486-79: Value as specified in approved finish schedule but not less than 1200.
 - 2. Washability per ASTM D3450-80: Value as specified in approved finish schedule but not less than 80% for sponge and 90% for brush.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.
 - a. Do not store oil or paint soaked rags inside the building.
 - 3. Do not store materials in any room containing a direct-fired heating unit.
- B. Mix and thin paints in strict accordance with recommendations of the manufacturer.
 - 1. Mix paints only in areas designated, and provided proper protection for walls and floors.

1.6 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply interior paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce manufacturer and product lists, the following requirements apply for product selection:
 - 1. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.3 COLORS

- A. The Architect has the option of accenting certain building elements different colors; (i.e.: doors, frames, columns, ceilings, walls) to be defined in a Schedule.
- B. The Architect reserves the right to select colors from manufacturer's standard or premium price groups, including deep tone colors for both interior and exterior products.

- C. Furnish an equal product by the same manufacturer only in those instances where a deep tone color specified by the Architect is not available in the specified product. This is subject to Architect's approval.
- D. Tinted primer shall be used whenever deep tone colors are specified.

2.4 INTERIOR FINISHES

A. Plaster and Gypsum Board Ceilings and Ceiling Drops

1. First Coat:

- a. Benjamin Moore: Moorcraft Vinyl Latex Primer-Sealer 273.
- b. Glidden Professional: High Hide Interior Primer Sealer 1000-1200.
- c. Pittsburgh Paints: 4-603 Permacrete interior/exterior Acrylic Alkali Resistant Primer for plaster; 6-2 Interior Latex Sealer for gypsum board.
- d. Pratt & Lambert: Plaster: Pro Hide Gold Z1001 Gypsum: Pro Hide Gold High Holdout Latex Primer/Sealer Z8165
- e. Sherwin Williams: ProMar 200 Zero VOC Primer B28W2600

2. Second Coat:

- a. Benjamin Moore: Moorcraft Vinyl Latex Flat 275
- b. Glidden Professional: Ultra-Hide 150 Interior Flat Paint 1210V Series.
- c. Pittsburgh Paints: Speedhide Latex Flat 6-70 (for all colors)
- d. Pratt & Lambert: Pro Hide Gold Latex Flat Z8100, Eggshell Z8200, Satin Z9400 or Semi Z8300.
- e. Sherwin Williams: ProMar 200 Zero VOC Latex Flat B30 Series

3. Third Coat:

- a. Benjamin Moore: Moorcraft Vinyl Latex Flat 275
- b. Glidden Professional: Ultra-Hide 150 Interior Flat Paint 1210V Series.
- c. Pittsburgh Paints: Speedhide Latex Flat 6-70 (for all colors)
- d. Pratt & Lambert: Pro Hide Gold Latex Flat Z8100, Eggshell Z8200, Satin Z9400, or Semi Z8300.
- e. Sherwin Williams: ProMar 200 Zero VOC Latex Flat B30 Series

B. Plaster and Gypsum Board Walls and Columns – Non-epoxy:

1. First Coat:

- a. Benjamin Moore: Moorcraft Vinyl Latex Primer-Sealer 273
- b. Glidden Professional: High Hide Interior Primer Sealer 1000-1200.
- c. Pittsburgh Paints: 4-603 Permacrete interior/exterior Acrylic Alkali Resistant Primer for plaster; 6-2 Interior Latex Sealer for gypsum board.
- d. Pratt & Lambert: Plaster: Pro Hide Gold Z1001 Gypsum: Pro Hide Gold High Holdout Latex Primer/Sealer Z8165.
- e. Sherwin Williams: ProMar 200 Zero VOC Primer B28W2600

2. Second and Third Coats:

- a. Benjamin Moore: Moorcraft Latex Eggshell Enamel 274
- b. Glidden Professional: Ultra-Hide 150 Interior Eggshell Paint 1412V Series.
- c. Pittsburgh Paints: Speedhide Latex Eggshell 6-411 Pratt & Lambert: Pro Hide + Latex Eggshell Enamel

- d. Pratt & Lambert: Pro Hide Gold Latex Flat Z8100, Eggshell Z8200, Satin Z9400 or Semi Z8300.
- e. Sherwin Williams: ProMar 200 Zero VOC Latex Eg-Shel B20 Series

C. Concrete Floors - Epoxy:

- 1. Preparation:
 - a. Surfaces shall be clean and dry.
 - b. Mechanically abrade surface to achieve a texture of medium grade sandpaper.
 - c. Sweep or vacuum all residues.
- 2. First Coat:
 - a. Diamond Polymers: 100LVP two component water based epoxy
 - 1) Apply one coat of water base epoxy, satin finish and spread at 250-275 sq. ft. per gallon.
 - 2) Allow 8 hours between coats.
 - b. Sherwin Williams: Armorseal 33 Epoxy Primer Sealer
 - 1) Apply one coat of Armorseal 33 Epoxy Primer Sealer and spread at 200 sq. ft. per gallon.
 - 2) Allow 6 hours between coats.
- 3. Second Coat:
 - a. Diamond Polymers: 320 – 100% solids, amine cured epoxy finish.
 - 1) Apply one coat of water base epoxy, satin finish and spread at 250-275 sq. ft. per gallon.
 - 2) Allow 16 hours for final cure.
 - b. Sherwin Williams: 650 SL/RC Self Leveling Recoatable 100% Solids Epoxy
 - 1) Apply one coat of 650 SL/RC and spread to 50-160 sq.ft. per gallon.
 - 2) Allow 24 hours for foot traffic – 7 days for full cure.

D. Ferrous, Galvanized Metals, Aluminum

- 1. Preparation:
 - a. See Divisions 5 and 8 for requirements for priming of ferrous metals.
 - b. Do all touch up and priming of unprimed metals in accordance with requirements of Divisions 5 and 8.
- 2. Apply paint in accordance with Steel Structure Painting Council Paint Application Specifications SSPC-PA1 to a dry film thickness as specified by the manufacturer.
- 3. First Coat - Primer:
 - a. Ferrous metal (to be used even at shop primed items except as noted in Division 5):
 - 1) Benjamin Moore: M04 Acrylic Metal Primer

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- 2) Glidden Professional: Devoe Coatings Devflex 4020PF Direct to Metal Primer & Flat Finish.
 - 3) Pittsburgh Paints: 90-708 Series, Pitt-Tech One Pack Interior/Exterior Industrial Primer.
 - 4) Pratt & Lambert: Steel Tech Acrylic Prime & Finish Z190
 - 5) Sherwin Williams: ProCryl Universal Metal Primer B66-310 Series
 - b. Galvanized metal after thorough cleaning per SSPC-SP1 with water soluble degreaser. No hydrocarbons.
 - 1) Benjamin Moore: M04 Acrylic Metal Primer
 - 2) Glidden Professional: Devoe Coatings Devflex 4020PF Direct to Metal Primer & Flat Finish.
 - 3) Pittsburgh Paints: 90-708 Series, Pitt-Tech One Pack Interior/Exterior Industrial Primer.
 - 4) Pratt & Lambert: Steel Tech Acrylic Prime & Finish Z190
 - 5) Sherwin Williams: ProCryl Universal Metal Primer B660310 Series
 - c. Aluminum:
 - 1) Benjamin Moore: M04 Acrylic Metal Primer
 - 2) Glidden Professional: Devoe Coatings Devflex 4020PF Direct to Metal Primer & Flat Finish.
 - 3) Pittsburgh Paints: 90-708 Series, Pitt-Tech One Pack Interior/Exterior Industrial Primer.
 - 4) Pratt & Lambert: Steel Tech Acrylic Prime & Finish Z190
 - 5) Sherwin Williams: ProCryl Universal Metal Primer B66-310 Series
 4. Second and Third Coats:
 - a. Benjamin Moore: Moorcraft Latex Semi Gloss Enamel 276
 - b. Glidden Professional: Ultra-Hide 150 Interior Latex Semi-Gloss Paint 1416V Series.
 - c. Pittsburgh Paint: 6-512 Series, Speedhide Semi-Gloss Latex Enamel.
 - d. Pratt & Lambert: Enducryl Acrylic Semi Gloss Z6621
 - e. Sherwin Williams: Pro Industrial Zero VOC Acrylic Semi-Gloss B66-600 Series.
- E. Painted Woodwork:
1. Coordinate with "Interior Architectural Woodwork" Section to verify Scope of Work to be finished by Millwork Contractor.
 - a. First Coat:
 - 1) Benjamin Moore: Moorcraft Alkyd Enamel Underbody 269
 - 2) Glidden Professional: Gripper Interior/Exterior Primer Sealer 3210
 - 3) Pittsburgh Paints: 17-956, Seal-Grip interior Alkyd Enamel Undercoater.
 - 4) Pratt & Lambert: Suprime Interior Alkyd Primer S1011
 - 5) Sherwin Williams: Premium Wall & Wood Primer B28W8111
 - b. Second Coat:
 - 1) Benjamin Moore: Moore's Dulamel Alkyd Eggshell Enamel 305
 - 2) Glidden Professional: Lifemaster Oil Interior/Exterior Eggshell Paint 1502
 - 3) Pittsburgh Paints: 6-90, Series Speedhide Lo-Sheen Alkyd Enamel
 - 4) Pratt & Lambert: Pro Hide Gold Alkyd Semi Gloss S8800

- 5) Sherwin Williams: ProMar 200 Interior Waterbased Acrylic-Alkyd B33W8251

F. Natural Finished Woodwork:

1. Coordinate with "Interior Architectural Woodwork" section to verify Scope of Work to be finished by Millwork Contractor.
 - a. First Step:
 - 1) Wood Filler, applied as per manufacturer's instructions
(Do not apply filler to open grained wood)
 - a) Benjamin Moore: Benwood Paste Wood Filler 238
 - b) Pratt & Lambert: Filler-Sealer
 - b. Second Step: Stain, as needed to achieve color as per Architect; applied as per manufacturer's instructions. The following products or equal as approved by Architect:
 - 1) Benjamin Moore: Moore's Interior Wood Penetrating Stain 241
 - 2) Glidden Professional: Wood Pride Interior Oil-Based Wood Stain 1700 Series.
 - 3) Pratt & Lambert: Interior Tonetic Wood Stain
 - 4) Pittsburgh Paints: 44500 Olympic Oil Based Stain
 - 5) Sherwin Williams: Wood Classic 250 VOC Stain.
 - c. Third Step: Sanding Sealer, if recommended by the manufacturer.
 - d. Fourth Step: Two (2) Finish Coats
 - 1) Benjamin Moore: Moore's Interior Stays Clear 423/Low Lustre
 - 2) Glidden Professional: Wood Pride Interior Waterbased Satin Varnish 1802-0000.
 - 3) Pratt & Lambert: Acrylic Latex Varnish Satin
 - 4) Pittsburgh Paints: Olympic 42786 Satin Water Based Polyurethane.
 - 5) Sherwin Williams: Wood Classic Waterborne Polyurethane Varnish, A68 Series.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Concrete: 12 percent.
 2. Masonry (Clay and CMU): 12 percent.
 3. Wood: 15 percent.
 4. Gypsum Board: 12 percent.

5. Plaster: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION OF NEW SUBSTRATES

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Clay Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.
- F. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- G. Ferrous Metals, Galvanized Metal, Aluminum: Clean surfaces according to the Steel Structure Painting Council Surface Preparation Specifications: SSPC-SP1 Solvent Cleaning, SSPC-SP2 Hand Tool Cleaning, or SSPC-SP3 Power Tool Cleaning, as appropriate.
 1. Steel Substrates: Remove any rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
 2. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
 - a. Thoroughly clean galvanized metal per SSPC-SP1 with water soluble degreaser. No hydrocarbons.

3. Aluminum Substrates: Remove surface oxidation.

H. Wood Substrates:

1. Refer to Division 6 Section "Finish Carpentry and Millwork" for preparation specified under other trades.
2. Countersink all nails and finish with putty or plastic wood filler. Sand smooth when dried.
3. Sand surfaces that will be exposed to view, and dust off.
4. Prime edges, ends, faces, undersides, and backsides of wood.
5. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

I. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

J. Plaster Substrates: Do not begin paint application until plaster is fully cured and dry.

K. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 PREPARATION OF EXISTING SUBSTRATES

A. Preparation of Previously Painted Surfaces: Comply with requirements as specified for preparation of new substrates as well as the following:

1. Scrub clean existing surfaces with a stiff brush and a solution of clean water and mild detergent.
2. Scuff sand surface to allow new finish to hold.
3. De-gloss painted surfaces in a manner appropriate to the substrate.
4. Fill cracks, holes, voids and defects, and leave a smooth surface ready for application of primer.
5. Remove loose paint and feather edges or patch as required to provide a smooth, seamless finish.
6. Prepare a 36" x 36" minimum test area to see if a reaction occurs between existing and new finishes prior to proceeding with the specified work. If a reaction occurs, alert Architect and propose solution(s).

3.4 PRIMING AND BACKPRIMING OF WOOD

A. All wood, factory finished or otherwise, must be back-primed immediately upon delivery with interior trim primer specified for wood which is to be painted, or finish manufacturer's recommended protective pre-treatment for wood which is to have natural finish.

B. Apply first coat to all wood scheduled to receive natural finish before material is handled at the site by other trades.

- C. Furnish sealer to other trades for touching up any bare wood caused by mortising or butting of surfaces, or any kind of assembly or installation.
- D. Avoid painting over or otherwise staining edges of wood where natural finish is scheduled.

3.5 APPLICATION

- A. General: Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - a. Except where specifically authorized by the Architect to do otherwise: Apply flat or eggshell wall paint by brush or roller; apply gloss or semi-gloss with brush only.
 - 2. Sanding: In addition to preparatory sanding, fine sand between succeeding coats of all varnish enamel or flat enamel, using sandpaper appropriate to the finish. Use fine production paper between coats.
 - 3. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 4. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 5. Doors: Finish all edges, including tops and bottoms, of wood and metal doors same as faces. Fill edges of exposed plywood doors, panels, similar materials.
 - 6. Finish interior of all closets and cabinets same as adjoining rooms, unless otherwise scheduled.
 - 7. Apply one coat of sanding sealer and one coat of semi-gloss varnish to insides of all drawers unless otherwise specified.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance. The number of coats scheduled are minimums.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
 - 1. Holidays and restrikes in painted surfaces shall be considered sufficient cause to require recoating of entire surface.

3.6 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.7 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

****END OF SECTION****

FIXED AUDIENCE SEATING

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 SUMMARY

- A. Fabrication and installation of new floor mounted, fixed auditorium seating.
- B. Materials, components, and services necessary to provide the work indicated or implied in this section and as specified herein, in the Contract Documents and shown on related drawings.
- C. Preparation and submission of sample chairs as indicated herein for review by the Architect, Acoustics Consultant and Theater Consultant prior to fabrication.
- D. Installation in accordance with these specifications, pertinent drawings, established trade criteria and applicable code requirements.
- E. Inspection, demonstration and necessary adjustment of completed installations.
- F. Submission of required record drawings, service data and certificates.
- G. Coordination with other affected work and contractors.

1.3 SUBMITTALS

- A. Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
 - 1. Substitutions for products as specified MUST be submitted in accordance with Division 1. Substitute products not submitted in accordance with Division 01 Section "Product Requirements" will NOT be considered. These requests will be reviewed for approval by the Architect, the Acoustics Consultant and the Theater Consultant.
- B. Product data for each type of product specified. Include construction details, material description, finish options and job specific installation methods.
- C. Shop drawings, (seating layout) developed from the contract documents that show aisle widths, chair spacing for each row, row-lettering and chair-numbering scheme, chair dimensions and back pitch. Layout drawings to also include locations for accessories, including, accessibility provisions and attachments to other work.
- D. Samples for initial selection purposes in the form of manufacturer's color charts or samples of materials showing the full range of standard colors, finishes, patterns, and textures available for each exposed material.
- E. Samples for verification purposes of each exposed material from which seating units and accessories are composed, in each color, finish, pattern, and texture indicated. Include samples of the following:
 - 1. Upholstery Fabric: Full-width sample, not less than 36 inches long, with specified treatments applied. Show complete pattern repeat. Mark top and right side.

2. Powder Coat Finishes: Manufacturer's standard size unit, not less than 3 inches square.
 3. Wood and Plywood Materials and Finishes: Manufacturer's standard size unit, not less than 3 inches square.
 4. Number and Letter Plates: Engraved metal faced plastic in finish selected by Architect.
 5. Exposed Fasteners: Each type specified.
 6. Chair Samples: Following approval of shop drawings submit actual chair sample fabricated in final fabrics and finishes.
- F. Maintenance instructions and inspection guidelines furnished for each chair model specified.
1. Methods for maintaining upholstery fabric.
 2. Precautions for cleaning materials and methods that could be detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified in writing by the seating manufacturer as qualified to install manufacturer's seating.
- B. Obtain each type of fixed seating required, including accessories and mounting components, from a single manufacturer.
- C. Obtain fabric of a single dye lot for each color and pattern of fabric required except when yardage requirement exceeds maximum dye lot. Multiple dye lots shall be color matched for quality assurance.
- D. Fire Performance Characteristics of Upholstered Seating:
1. Fabric shall be Class 1 according to DOC CS 191 and 16 CFR 1610.61, tested according to California Technical Bulletin 117.
 2. Padding shall comply with California Technical Bulletin 117.
- E. Single Source Responsibilities: Obtain each type of seating, including accessories and mounting components, from one source of a single manufacturer.
- F. Seating Layout: Design and install seating with end standards aligning from first to last row and with backs and seats varied in width, optimizing sightlines. Comply with ADA Rules and Regulations for end standard design and location.
- G. Coordination of Work:
1. Coordinate installing electrical wiring with seating layout to ensure that floor junction boxes for aisle lights are located inboard of aisle light standards with no exposed conduit.
 2. Coordinate installation of return air devices into seating layout to ensure proper location of both.

1.5 WARRANTY

- A. Seating Contractor shall warrant materials and workmanship of all seats and chairs including but not limited to structural components, operating mechanisms, wood plastic and painted components supplied as free of defects, and shall guarantee in writing the repair or replacement within 14 days of all items found defective during a period of 5 years following the date of final acceptance. Ordinary wear and defects due to improper usage are excepted.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Do not deliver or install seating until space is enclosed and weatherproof, wet-work in space is complete and nominally dry, installation of finishes including painting is complete, and other units of work above the ceiling are complete. Do not install seating until ambient temperature and humidity conditions are continuously maintained at final occupancy values.
- B. Field Measurements: Check seating layout by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid a delay in the Work.

1.7 EXTRA MATERIALS

- A. Extra Materials: Furnish extra materials from the same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish complete seat and back assemblies equal to 2% of amount installed for each type and size of chair seat and back.
 - 2. Furnish seat and back fabric covers equal to 5% of amount installed for each type and size of cushion.
 - 3. Furnish armrests equal to 2% of amount installed for each type of armrest.

PART 2 – PRODUCTS

2.1 MANUFACTURERS/CONTRACTORS

- A. Approved manufacturers subject to compliance with requirements outlined herein.
- B. Basis-of-design for fixed audience seating is Irwin Seating Company Model 91.12.66.4 Millennium or comparable product by one of the following:
 - 1. American Seating Company Spirit Chair.
 - 2. K.I. Concerto Chair.

2.2 MATERIALS

- A. Gray Iron Castings: ASTM A 48, Class 25 (25,000 psi), free of bow holes and hot checks with parting lines, ground smooth.
- B. Steel shall meet requirements for ASTM A 36/A 36M plates, shapes, and bars; ASTM A 513 mechanical tubing; ASTM A 1008/A 1008M cold-rolled sheet; and ASTM A 1011 hot-rolled sheet and strip.

- C. All exposed metal parts shall be powder coated with a hybrid thermosetting powder coat finish. The powder coat finish shall be applied by electrostatic means to a thickness of 2 - 5 mils, and shall provide a durable coating having a 2H Pencil hardness. Prior to powder coating, metal parts shall be treated with a three-stage non-acidic, bonderizing process for superior finish adhesion, and after coating shall be oven baked to cause proper flow of the epoxy powder to result in a smooth, durable finish. Color to be Irwin Seating Company #28 Black.
- D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591, commercial and drawing quality, Coating Class C, chemically treated for baked-enamel finish and not less than 0.0396 inch thick.
- E. Exposed Hardwood Lumber: Provide premium, Grade A, red oak, flat cut, balanced and book matched, stained. Color to match Irwin Seating Company #27 Classic Golden..
- F. Concealed Plywood: Hardwood plywood complying with ANSI/HPVA HP-1 or softwood plywood complying with ANSI/VOL. PROD. STD. PS 1, as standard with manufacturer.
- G. Exposed Plywood: Hardwood plywood complying with ANSI/HPVA HP-1, A Grade; hardwood veneer core construction, Type I or II, thickness as standard with seating manufacturer; using Premium red oak, plain sliced, stained and finished to match exposed hardwood lumber.
- H. Fabric: Upholstery fabric shall be 100% polyolefin Shire pattern. Fabric shall have an acrylic backing and have a minimum weight 16 oz. per lineal yard (± 1 oz.). Fabric shall meet class 5 specifications for color fastness and light fastness and withstand 250,000 double rubs per ASTM D-4157. Fabric shall meet flammability resistance outlined in California Technical Bulletin 117, section E; CS-191-53, class 1; NFPA 260-1989, Class 1; UFAC, class 1; B.S. 5852 part 1: 1979 Ignition Source 0, smoldering cigarette.
 - 1. Upholstery at chair seat and back shall be Absecon Mills, "Shire" pattern in the color "Ink". (Absecon Mills is represented by Scott Bartolomei (872) 222-5115.)
- J. Upholstery padding shall be molded or slab polyurethane foam.
- K. Molded Plastics:
 - 1. Structural components shall be mar and dent resistant high density glass-filled polypropylene with UV stabilizers.
 - 2. Decorative components shall be mar and dent resistant high density polyethylene (HDPE) with UV stabilizers.
 - 3. Plastic components color shall be Irwin Seating Company #28 Black.

2.3 FABRICATION, GENERAL

- A. Manufacture fabric-covered cushions with molded padding beneath fabric and with fabric covering free of welts, creases, stretch lines, and wrinkles. For each upholstered component, install pile and pattern run in a consistent direction.
- B. Fabricate chair backs of seating rows located immediately in front of cross aisles on sloped or tiered floors so that back heights are not less than the dimension indicated below, measured from walking surface of cross aisle immediately behind seating:
 - 1. 26 inches.
- C. Width of seats shall not be less than 21".

- D. Fabricate floor attachment plates to conform to floor slope, if any, so that standards are plumb and chairs are maintained at same angular relationship to vertical throughout project.

2.4 MOUNTING

- A. Floor Mounting: Standards shall conform to floor slope while maintaining seat and back in the same angular relationship to standards throughout.

2.5 METAL STANDARDS

- A. Tubular Steel Standards: Chair support columns shall be a formed 14 gauge (.0747") steel tube with an integral back wing plate. Column shall exhibit a 10° rearward incline to help conceal back attachment hardware.
- B. Brackets for Seat Attachment: Brackets shall be 7-gauge (.1875") steel for superior strength, formed with an integral support buttress.
- C. Floor Attachment: Floor attachment foot shall be formed from 12 gauge (.105) steel to 7-1/2" x 2-5/8" in size.
- D. Welding: All steel components shall be robotic welded for precise assembly and exceptional integrity. Foot-to-column welds are to be concealed on the inside of the foot for a clean appearance. The standard shall be fabricated to be compatible with the floor incline, and to maintain proper seat and back height and angle.
- E. End Panels: Aisle end panels shall be rectangular-shaped with a rounded bottom edge, constructed of medium density fiberboard (MDF) and surfaced with Plastic Laminate – Nevamar Recon Oak WZ005N Hi-Luster. Panels shall be provided with a seat bracket recess for precise location and support of the panel. Panel is secured to a 14 gauge formed steel bracket bolted to the top of the support column and directly to the support column with the use of a spacer. Panel bracket assembly is concealed behind a steel shroud attached with a tamper resistant screw.
 - 1. Provide special aisle standards in configuration and quantity as required by ADA.
 - 2. "Focal" aisle lights fabricated by Vista Manufacturing shall be furnished for aisle standards designated on the approved seating layout drawings. Aisle lights shall be low voltage, non-hazardous 24 volt, D.C. Fixtures shall be centered high on the aisle standard decorator panels, to provide illumination of the aisle panel and adjacent floor and/or steps. Fixtures are 2-3/16" diameter black hooded assemblies with high-output, light emitting diodes (LED) designed to provide an even, consistent wash of white illumination. The aisle light standards are to be provided pre-wired with approximately 18" of wiring extending beyond the base of the standards. Wiring shall be encased within a black, rubber-coated flex steel conduit that exits the column just above the foot. Coordinate final connection of the aisle light wiring to the building circuit with electrical contractor.

2.6 UPHOLSTERED BACKS

- A. Backs shall be padded and upholstered on their face, with a one-piece injection molded polymer rear panel formed with rounded top.
- B. The foundation of the back component shall be provided by a 7/16" thick, 5-ply hardwood inner panel that shall also serve as the upholstery substrate. The face of the back shall be upholstered over a 2" thick polyurethane foam pad. The polyfoam pad shall be securely

cemented to the plywood inner panel and upholstered with a 1-piece cover securely fastened to the hardwood inner panel by means of upholstery staples to facilitate ease of re-upholstering.

- C. The rear designer panel shall be injection molded HDPE plastic, high impact-resistant, with textured outer surface, formed to enclose the edges of the inner upholstery panel at the top and both sides of the back, and shall be not less than 25" in length, extending down to the rear of the seat. There shall be no exposed screws above the armrests.
- D. Wings used for the attachment of the complete back assembly to the standards shall be not less than 14 gauge (.0747") steel. Wings shall be firmly secured to the inner panel through the use of threaded t-nuts fastened to the inner panel. Assembled chair shall have a nominal back height of 34".
- E. The back assembly shall be certified through routine ISO testing to withstand a 250 lb. static load test applied approximately 16" above the seat assembly and a 100,000 cycle 40 lb. swing impact test.

2.7 UPHOLSTERED SEATS

- A. Seats shall be padded and upholstered on their top surface with a structural, injection molded polypropylene seat foundation. Seats shall self-rise to a uniform position when unoccupied. The mechanism shall be certified through routine ISO testing to exceed 300,000 cycles during ASTM Designation F851-87 Test Method for Self-Rising Seat Mechanism. In addition, the seat shall withstand as a 600 lb. static load test applied approximately 3" from the front edge of the seat assembly and a 50,000 cycles 125 lb. vertical drop impact test.
 - 1. Seat foundation shall be engineered glass-filled, injection molded polypropylene, strengthened by deep internal ribs and gussets, completely enclosing the self-rising hinge mechanism. Bottom surface of the foundation shall be textured and feature an attractive molded recess. Bolted attachment of the seat assembly to the chair standard shall be concealed by an integral color-coordinated plastic cap to present a finished, refined appearance.
 - 2. When unoccupied, the seat shall rise automatically to a 3/4 safety fold position, and upon a slight rearward pressure, shall achieve full-fold, allowing the patron additional passing room. The seat shall rotate on two, molded acetal shafts supported by nylon bearings with integral down-stops for exceptional strength. Seat-lift shall be accomplished by compression springs and self-lubricating plastic cams.
 - 3. The base structure for the cushion assembly shall be an ergonomic contoured, rigid thermoplastic resin panel covered with a 3" thick molded polyurethane foam pad. Cushion assembly is upholstered with a carefully tailored fabric cover secured around the perimeter of the thermoplastic resin panel by means of a drawstring and staples and securely locked to the seat foundation, preventing unauthorized removal; but facilitating convenient access by trained maintenance personnel.
- F. Chair width shall vary to accommodate sightlines and row lengths.
- G. Back height and pitch shall be fixed as shown on seating layout drawings.
- H. Center standards shall be provided with a glass-filled polypropylene armrest support structure capable of surpassing a 200 lb. vertical static load test applied 3" from the front edge of the armrest. Armrest support shall be attached to the support column with an integral ribbed post that binds into the steel support column and locked in place with a concealed security screw. Support structure is capped with a flat solid wood armrest attached with concealed hardware.

Aisle end armrests are to be attached to the 14-gauge aisle panel bracket with concealed hardware.

- I. Row-lettering and chair-numbering shall be provided for identification of all chairs as shown on approved seating layout drawings. Number plates shall be 5/8" x 1-5/8" aluminum with a bronze finish and black sans serif numerals. The seat pans shall be recessed at the center of the front edge for the number plates, and attached by two (2) pop rivets. Letter plates shall be 5/8" x 1-5/8" with a bronze finish and black sans serif numerals attached in recess of aisle standard armrest by two (2) escutcheon pins. Attaching hardware shall have a finish compatible to plates.
- K. Accessible Seating:
 - 1. Shall be designated on the seating layout drawings and designed to allow an individual to transfer from a wheelchair to the theatre chair. The aisle standard shall be equipped with an armrest capable of lifting to a position parallel with the support column, opening sideways access to the seat. Aisle standards so equipped shall be provided with a label, displaying an easily recognizable "handicapped" symbol. Decorative requirements of aisle standards are waived for the handicapped access standards.
 - 2. Chairs located as shown in the contract drawings shall be mounted upon moveable steel bases. The steel bases shall be available for sections of one (1), two (2), or three (3) chairs. The bases shall be fabricated from 3/16" x 3-1/2" x 15-1/2" steel, with cross members securely fastened to the horizontal base members via Tec screws. Holes shall be provided for the attachment of the chair standards. Moveable bases are secured to the floor when the seating is in use with reverse anchors.

2.8 ARMS

- A. Arms shall be solid hardwood, stained.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for construction tolerances, material properties as they affect anchors and fasteners, location of junction boxes and other conditions which may prevent proper and timely execution of the installation but not limited to, plumb of riser faces and concrete conditions.
- B. Do not proceed until unsatisfactory conditions have been corrected. Start of work shall indicate acceptance of the substrate and surrounding conditions.

3.2 INSTALLATION

- A. Install seating in locations indicated and fastened securely to substrates according to manufacturer's written installation instructions.
- B. Use installation methods and fasteners that produce fixed audience seating assemblies with individual chairs capable of supporting an evenly distributed 600-lb static load applied 3" from front edge of the seat without failure or other conditions that might impair the chair's usefulness.
- C. Install seating with chair end standards aligned from first to last row and with backs and seats varied in width and spacing to optimize sightlines.

- D. Install riser-mounted attachments to maintain uniform chair heights above floor.
- E. Install chairs in curved rows at a smooth radius.

- F. Install seating so moving components operate smoothly and quietly

3.3 ADJUSTING

- A. Adjust chair backs so that they are properly aligned with each other.
- B. Adjust self-rising seat mechanisms to ensure seats in each row are aligned when in upright position.
- C. Verify that all components and devices are operating properly.
- D. Repair minor abrasions and imperfections in painted finishes with a coating that matches the factory-applied finish.
- E. Replace upholstery fabric damaged during installation.

****END OF SECTION****

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes electrical general administrative and procedural requirements. The following requirements are included in this Section to supplement the requirements specified in Division 1 Specification Sections.

1.3 REFERENCES

- A. All materials shall be new. The electrical and physical properties of all materials, and the design, performance characteristics, and methods of construction of all items of equipment, shall be in accordance with the latest issue of the various, applicable Standard Specifications of the following recognized authorities:

1. A.N.S.I. American National Standards Institute
2. A.S.T.M. American Society for Testing Materials
3. I.C.E.A. Insulated Cable Engineers Association
4. I.E.E.E. Institute of Electrical and Electronics Engineers
5. N.E.C. National Electrical Code
6. N.E.C.A National Electrical Contractors Association
7. N.E.M.A.National Electrical Manufacturer's Association
8. U.L.Underwriters Laboratories, Inc.
9. N.E.C.A. 1-2000, "Practices for Good Workmanship in Electrical Contracting (ANSI)."

1.4 QUALITY ASSURANCE

- A. Scope of Work: Furnish all labor, material, equipment, technical supervision, and incidental services required to complete, test and leave ready for operation the electrical systems as specified in the Division 26 Sections and as indicated on Drawings.
- B. Ordinances and Codes: Perform all Work in accordance with applicable Federal, State and local ordinances and regulations, the Rules and Regulations of NFPA, NECA, and UL, unless otherwise indicated.
 1. Notify the Architect/Engineer before submitting a proposal should any changes in Drawings or Specifications be required to conform to the above codes, rules or regulations. After entering into Contract, make all changes required to conform to above ordinances, rules and regulations without additional expense to the Owner.
- C. Source Limitations: All equipment of the same or similar systems shall be by the same manufacturer.
- D. Tests and Inspections: Perform all tests required by state, city, county and/or other agencies having jurisdiction. Provide all materials, equipment, etc., and labor required for tests.
- E. Performance Requirements: Perform all work in a first class and workmanlike manner, in accordance with the latest accepted standards and practices for the trades involved.
- F. Sequence and Schedule: Work so as to avoid interference with the work of other trades. Be responsible for removing and relocating any work which in the opinion of the Owner's Representatives causes interference.

1.5 CODES, PERMITS AND FEES

- A. Unless otherwise indicated, all required permits, licenses, inspections, approvals and fees for electrical work shall be secured and paid for by the Contractor. All work shall conform to all applicable codes, rules and regulations.
- B. Rules of local utility companies shall be complied with. Coordinate with the utility company supplying service to the installation and determine all devices including, but not limited to, all

current and potential transformers, meter boxes, C.T. cabinets and meters which will be required and include the cost of all such items and all utilities costs in proposal.

- C. All work shall be executed in accordance with the rules and regulations set forth in local and state codes. Prepare any detailed Drawings or diagrams which may be required by the governing authorities. Where the Drawings and/or Specifications indicate materials or construction in excess of code requirements, the Drawings and/or Specifications shall govern.

1.6 DRAWINGS

- A. The Drawings show the location and general arrangement of equipment, electrical systems and related items. They shall be followed as closely as elements of the construction will permit.
- B. Examine the Drawings of other trades and verify the conditions governing the work on the job site. Arrange work accordingly, providing such fittings, conduit, junction boxes and accessories as may be required to meet such conditions.
- C. Deviations from the Drawings, with the exception of minor changes in routing and other such incidental changes that do not affect the functioning or serviceability of the systems, shall not be made without the written approval of the Architect/Engineer.
- D. The architectural and structural Drawings take precedence in all matters pertaining to the building structure, mechanical Drawings in all matters pertaining to mechanical trades and electrical Drawings in all matters pertaining to electrical trades. Where there are conflicts or differences between the Drawings for the various trades, report such conflicts or differences to the Architect/Engineer for resolution.
- E. Drawings are not intended to be scaled for rough-in or to serve as shop drawings. Take all field measurements required to complete the Work.

1.7 MATERIAL AND EQUIPMENT MANUFACTURERS

- A. All items of equipment shall be furnished complete with all accessories normally supplied with the catalog items listed and all other accessories necessary for a complete and satisfactory operating system. All equipment and materials shall be new and shall be standard products of manufacturers regularly engaged in the production of electrical equipment and shall be of the manufacturer's latest design.
- B. If an approved manufacturer is other than the manufacturer used as the basis for design, the equipment or product provided shall be equal in size, quality, durability, appearance, capacity, and efficiency through all ranges of operation, shall conform with arrangements and space limitations of the equipment shown on the plans and/or specified, shall be compatible with the other components of the system and shall comply with the requirements for Items Requiring Prior Approval specified in this section of the Specifications. All costs to make these items of equipment comply with these requirements including, but not limited to, electrical work, and building alterations shall be included in the original Bid. Similar equipment shall be by one manufacturer.

1.8 INSPECTION OF SITE

- A. Visit the site, examine and verify the conditions under which the Work must be conducted before submitting Proposal. The submitting of a Proposal implies that the Contractor has visited the site and understands the conditions under which the Work must be conducted. No additional charges will be allowed because of failure to make this examination or to include all materials and labor to complete the Work.

1.9 ITEMS REQUIRING PRIOR APPROVAL

- A. Bids shall be based upon manufactured equipment specified. All items that the Contractor proposes to use in the Work that are not specifically named in the Contract Documents must be submitted for review prior to bids. Such items must be submitted in compliance with Division 1 specifications. Requests for prior approval must be accompanied by complete catalog information, including but not limited to, model, size, accessories, complete electrical information and performance data in the form given in the equipment schedule on the drawings at stated design conditions. Where items are referred to by symbolic designations on the drawings, all requests for prior approval shall bear the same designations.
 - 1. Equipment to be considered for prior approval shall be equal in quality, durability, appearance, capacity and efficiency through all ranges of operation, shall fulfill the requirements of equipment arrangement and space limitations of the equipment shown on the plans and/or specified and shall be compatible with the other components of the system.
 - 2. All costs incurred to make equipment comply with other requirements, including providing maintenance, clearance, electrical, replacement of other components, and building alterations shall be included in the original bid.
- B. Voluntary alternates may be submitted for consideration, with listed addition or deduction to the bid.

1.10 SHOP DRAWINGS/SUBMITTALS

- A. Submit project-specific submittals for review in compliance with Division 1.
- B. All shop Drawings shall be submitted in groupings of similar and/or related items (lighting fixtures, switchgear, etc.). Incomplete submittal groupings will be returned unchecked.
- C. Provide detailed layout shop Drawings (on transparent media) of all lighting and power distribution systems, routing of conduits, combining of circuits, circuiting, details and related information necessary of installation and maintenance. After review by the Architect/Engineer, a copy of Drawings will be stamped and returned to the Contractor.
- D. If deviations (not substitutions) from Contract Documents are deemed necessary by the Contractor, details of such deviations, including changes in related portions of the project and the reasons therefore, shall be submitted with the submittal for approval.
- E. Submit for approval shop drawings for all electrical systems or equipment but not limited to the items listed below. Where items are referred to by symbolic designation on the Drawings and Specifications, all submittals shall bear the same designation (light fixtures). Refer to other sections of the electrical Specifications for additional requirements.
 - 1. Panelboards
 - 2. Lighting Fixtures (aisle searing lights)
 - 3. Sound Systems

1.11 COORDINATION DRAWINGS

- A. Submit project specified coordination drawings for review in compliance with Division 1 Specification Sections.

1.12 OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS

- A. Submit project specific Operation and Maintenance Instructional Manuals for review in compliance with Division 1 Specification Sections.
- B. Provide complete operation and maintenance instructional manuals covering all electrical equipment herein specified, together with parts lists. Maintenance and operating instructional manuals shall be job specific to this project. Generic manuals are not acceptable. Four (4) copies of all literature shall be furnished for Owner and shall be bound in ring binder form. Maintenance and operating instructional manuals shall be provided when construction is approximately 75% complete.
- C. The operating and maintenance instructions shall include a brief, general description for all mechanical systems including, but not limited to:
 - 1. Routine maintenance procedures.
 - 2. Lubrication chart listing all types of lubricants to be used for each piece of equipment and the recommended frequency of lubrication.
 - 3. Trouble-shooting procedures.
 - 4. Contractor's telephone numbers for warranty repair service.
 - 5. Submittals.
 - 6. Recommended spare parts lists.
 - 7. Names and telephone numbers of major material suppliers and subcontractors.
 - 8. System schematic drawings on 8-1/2" x 11" sheets.

1.13 RECORD DRAWINGS

- A. Submit record drawings in compliance with Division 1.
- B. Contractor shall submit to the Architect/Engineer, record drawings on electronic media or mylar which have been neatly marked to represent as-built conditions for all new electrical work.
- C. The Contractor shall keep accurate note of all deviations from the construction documents and discrepancies in the underground concealed conditions and other items of construction on field drawings as they occur. The marked up field documents shall be available for review by the Architect, Engineer and Owner at their request.

1.14 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of electrical equipment and systems at agreed upon times. A minimum of 8 hours of formal instruction to Owner's personnel shall be provided for each building. Additional hours are specified in individual specification sections.
- B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

- C. In addition to individual equipment training provide overview of each electrical system. Utilize the as-built documents for this overview.
- D. Prepare and insert additional data in operation and maintenance manual when need for such data becomes apparent during instruction, or as requested by Owner.

1.15 WARRANTY

- A. Warranty: Comply with the requirements in Division 1 Specification Sections. Contractor shall warranty that the electrical installation is free from defects and agrees to replace or repair, to the Owner's satisfaction, any part of this electrical installation which becomes defective within a period of one year (unless specified otherwise in other Division 26 sections) from the date of substantial completion following final acceptance, provided that such failure is due to defects in the equipment, material, workmanship or failure to follow the contract documents.
- B. File with the Owner any and all warranties from the equipment manufacturers including the operating conditions and performance capacities they are based on.

1.16 USE OF EQUIPMENT

- A. The use of any equipment, or any part thereof for purposes other than testing even with the Owner's consent, shall not be construed to be an acceptance of the work on the part of the Owner, nor be construed to obligate the Owner in any way to accept improper work or defective materials.
- B. Do not use Owner's lamps for temporary lighting except as allowed and directed by the Owner. Equip lighting fixtures with new lamps when the project is turned over to the Owner.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 INSTALLATION OF EQUIPMENT

- A. Install all equipment in strict accordance with all directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the Drawings and Specifications, report such conflicts to the Architect/Engineer for resolution.
- B. Device Location:
 - 1. Allow for relocation prior to installation of wiring devices and other control devices, for example, receptacles, switches, fire alarm devices, and access control devices, within a 10-foot radius of indicated location without additional cost.

3.2 DEMOLITION WORK

- A. All demolition of existing electrical equipment and materials will be done by this Contractor unless otherwise indicated. Include all items such as, but not limited to, electrical equipment, devices, lighting fixtures, conduit, and wiring called out on the Drawings and as necessary whether such items are actually indicated on the Drawings or not in order to accomplish the installation of the specified new work.

- B. In general, demolition work is indicated on the Drawings. However, the Contractor shall visit the job site to determine the full extent and character of this work.
- C. Unless specifically noted to the contrary, removed materials shall not be reused in the work. Salvaged materials that are to be reused shall be stored safe against damage and turned over to the appropriate trade for reuse. Salvaged materials of value that are not to be reused shall remain the property of the Owner unless such ownership is waived. Items on which the Owner waives ownership shall become the property of the Contractor, who shall remove and legally dispose of same, away from the premises.
- D. Where equipment or fixtures are removed, outlets shall be properly blanked off, and conduits capped. After alterations are done, the entire installation shall present a "finished" look, as approved by the Architect/Engineer. The original function of the present electrical work to be modified shall not be changed unless required by the specific revisions to the system as specified or as indicated.
- E. Reroute signal wires, lighting and power wiring as required to maintain service. Where walls and ceilings are to be removed as shown on the Drawings, the conduit is to be cut off by the Electrical Trades so that the abandoned conduit in these walls and ceilings may be removed with the walls and ceilings by the Architectural Trades. All dead-end conduit runs shall be plugged at the remaining line outlet boxes or at the panels.
- F. Where new walls and/or floors are installed which interfere with existing outlets, devices, etc., the Electrical Trades shall adjust, extend and reconnect such items as required to maintain continuity of same.
- G. All electrical work in altered and unaltered areas shall be run concealed wherever possible. Use of surface raceway or exposed conduits will be permitted only where approved by the Architect/Engineer.
- H. Existing lighting shall be reused where indicated on plans. Reused fixtures shall be detergent cleaned, relamped and reconditioned suitable for satisfactory operation and appearance.

3.3 TEMPORARY SERVICES

- A. Provide and remove upon completion of the project, in accordance with the general conditions and as described in Division 1, a complete temporary electrical and telephone service during construction.

3.4 CHASES AND RECESSES

- A. Provided by the architectural trades, but the Contractor shall be responsible for their accurate location and size.

3.5 CUTTING, PATCHING AND DAMAGE TO OTHER WORK

- A. Refer to General Conditions for requirements.
- B. All cutting, patching and repair work shall be performed by the Contractor through approved, qualified subcontractors. Contractor shall include full cost of same in bid.

3.6 EXCAVATION AND BACKFILLING

- A. Provide all excavation, trenching, tunneling, dewatering and backfilling required for the electrical work. Coordinate the work with other excavating and backfilling in the same area.

- B. Where conduit is installed less than 2'6" below the surface of pavement, provide concrete encasement, 4" minimum coverage, all around or as shown on the electrical Drawings.
- C. Backfill all excavations with well-tamped granular material. Backfill all excavations under wall footings with lean mix concrete up to underside of footings and extend concrete within excavation a minimum of four (4) feet each side of footing. Granular backfill shall be placed in layers not more than 8 inches in thickness, 95 percent compaction throughout with approved compaction equipment. Tamp, roll as required. Excavated material shall not be used.
- D. Backfill outside building with granular material to a height 12 inches over top of pipe compacted to 95 percent compaction as specified above. Backfill remainder of excavation with unfrozen, excavated material in such a way to prevent settling.

3.7 EQUIPMENT CONNECTIONS

- A. Make connections to equipment, motors, lighting fixtures, and other items included in the work in accordance with the approved shop Drawings and rough-in measurements furnished by the manufacturers of the particular equipment furnished. All additional connections not shown on the Drawings, but called out by the equipment manufacturer's shop Drawings shall be provided.

3.8 CLEANING

- A. All debris shall be removed daily as required to maintain the work area in a neat, orderly condition.
- B. Final cleanup shall include, but not be limited to, washing of fixture lenses or louvers, switchboards, substations, motor control centers, panels, etc. Fixture reflectors and lenses or louvers shall be left with no water marks or cleaning streaks.

3.9 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be protected from theft, injury or damage.
- B. Protect conduit openings with temporary plugs or caps.
- C. Provide adequate storage for all equipment and materials delivered to the job site. Location of the space will be designated by the Owner's representative or Architect/Engineer. Equipment set in place in unprotected areas must be provided with temporary protection.

3.10 EXTRA WORK

- A. For any extra electrical work which may be proposed, this Contractor shall furnish to the General Contractor, an itemized breakdown of the estimated cost of the materials and labor required to complete this work. The Contractor shall proceed only after receiving a written order from the General Contractor establishing the agreed price and describing the work to be done.

Prior to any extra work which may be proposed, the Electrical Contractor shall submit unit prices (same prices for increase/decrease of work) for the following items: 1/2", 3/4", 1", 1-1/2" conduit; #12, #10, #8, #6, #2 wire; receptacle, I.G. receptacle, data box, fire alarm horn/strobe, fire alarm strobe, P.A. speaker, clock, or other devices which may be required for any proposed extra work.

3.11 DRAWINGS AND MEASUREMENTS

- A. These Specifications and accompanying Drawings are intended to describe and provide for finished work. They are intended to be cooperative, and what is called for by either shall be as binding as if call for by both. The Contractor understands that the work herein described shall be complete in every detail.
- B. The Drawings are not intended to be scaled for rough-in measurements nor to serve as Shop Drawings. Field measurements necessary for ordering materials and fitting the installation to the building construction and arrangement are the Contractor's responsibility. The Contractor shall check latest Architectural Drawings and locate light switches from same where door swings are different from Electrical Drawings.

****END OF SECTION****

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PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.2 SUMMARY
 - A. This Section includes the following:
 1. Electrical equipment coordination and installation.
 2. Sleeves for raceways and cables.
 3. Sleeve seals.
 4. Common electrical and communications installation requirements.
 5. Grout.
- 1.3 DEFINITIONS
 - A. ATS: Acceptance Testing Specifications.
 - B. EPDM: Ethylene-propylene-diene terpolymer rubber.
 - C. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

- A. Test Equipment Suitability and Calibration: Comply with NETA ATS, "Suitability of Test Equipment" and "Test Instrument Calibration."

1.6 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
 - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
 - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
 - 3. To allow right of way for piping and conduit installed at required slope.
 - 4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- C. Coordinate location and provide access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 8 Section "Access Doors and Frames."
- D. Coordinate electrical testing of electrical, mechanical, and architectural items, so equipment and systems that are functionally interdependent are tested to demonstrate successful interoperability.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch (1.3- or 3.5-mm) thickness as indicated and of length to suit application.

- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 7 Section "Through-Penetration Firestop Systems."

2.3 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 - 1. Manufacturers:
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
 - 2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 3. Pressure Plates: Stainless steel. Include two for each sealing element.
 - 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.4 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 TELEPHONE BACKBOARDS

- A. Material: Fire retardant plywood.
- B. Size: 4 x 8 feet, 3/4 inch thick.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL AND COMMUNICATIONS INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL AND COMMUNICATIONS PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 7 Section "Through-Penetration Firestop Systems."
- C. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require a different clearance.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 7 Section "Joint Sealants" for materials and installation.
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with Division 7 Section "Through-Penetration Firestop Systems."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground, exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve.

3.4 TELEPHONE BACKBOARD INSTALLATION

- A. Support raceways, backboards, and cabinets under the provisions of Section 260529.
- B. Install termination backboards plumb, and attach securely at each corner.

3.5 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Through-Penetration Firestop Systems."

3.6 FIELD QUALITY CONTROL

- A. Inspect installed sleeve and sleeve-seal installations and associated firestopping for damage and faulty work.

****END OF SECTION****

CONDUCTORS AND CABLES

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.
- B. Related Sections include the following:
 - 1. Division 26 Section "Control/Signal Transmission Media" for transmission media used for control and signal circuits.
 - 2. Division 26 Section "Electrical Identification" for conductor and cable color-coding.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For testing agency.
- C. Field Quality-Control Test Reports: From a qualified testing and inspecting agency engaged by Contractor.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the InterNational Electrical Testing Association and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 CONDUCTORS AND CABLES

- A. Manufacturers, Copper:
 - 1. Triangle.
 - 2. Royal.
 - 3. Rome.
 - 4. General Cable Corporation.
 - 5. Southwire Company.
 - 6. Draka USA.
- B. Manufacturers, Aluminum:
 - 1. Southwire Company; "SIMpull" THHN
- C. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.
- D. Conductor Material: Copper, except feeders No. 1 AWG and larger may be aluminum; Southwire SIMpull THHN; stranded conductor. Note: Service Entrance conductors (from the pad mounted transformer to the Main Distribution Panelboard) shall be copper.
- E. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.
- F. Conductor Insulation Types: Type THHN-THWN and XHHW complying with NEMA WC 70.
- G. Multiconductor Cable: Metal-clad cable, Type MC with ground wire.

2.3 CONNECTORS AND SPLICES

- A. Manufacturers:
 - 1. AFC Cable Systems, Inc.

2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. 3M Company; Electrical Products Division.
6. T & B.
7. Burndy.
8. ILSCO.

- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.1 CONDUCTOR AND INSULATION APPLICATIONS

- A. Service Entrance: Type XHHW, single conductors in raceway.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Exposed Feeders #4/0 and larger: Type XHHW, single conductor in raceway.
- D. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- E. Feeders Concealed in Concrete, below Slabs-on-Grade, and in Crawlspace: Type THHN-THWN, single conductors in raceway.
- F. Exposed Branch Circuits, including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- G. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway and metal-clad cable, Type MC, for branch circuit drops to devices and within partition walls. MC cable shall not be run in ceiling space in lengths greater than 6'-0".
- H. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.
- I. Underground Feeders and Branch Circuits: XHHW single conductors in conduit.
- J. Cord Drops and Portable Appliance Connections: Type SO, hard service cord.
- K. Fire Alarm Circuits: Type THHN-THWN, in raceway or Power-limited, fire-protective, signaling circuit cable.
- L. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- M. Class 2 Control Circuits: Type THHN-THWN, in raceway.
- N. Critical Fire Control Circuits: Type RHH, single conductor in raceway. UL classified with two hour fire rating when installed in EMT conduit per the NEC and UL electrical circuit protective system (FHIT) #25 of the UL fire resistance directory. Support every 5' on center.

- O. Variable Speed Drives to Motors: Use VFD power cable manufactured by Southwire or Draka. Support every 5' on center.

3.2 INSTALLATION

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Basic Electrical Materials and Methods."
- F. Seal around cables penetrating fire-rated elements according to Division 7 Section "Through-Penetration Firestop Systems."
- G. Each feeder shall be of the same conductor and insulation material (phase, neutral, and parallel).
- H. Identify and color-code conductors and cables according to Division 26 Section "Electrical Identification."
- I. All wiring shall be installed in conduit or approved raceway. All raceways shall be provided with a ground conductor unless noted otherwise on the Contract Documents.
- J. Use conductor not smaller than 12 AWG for power and lighting circuits. Unless indicated otherwise, all circuits shall be 2#12, 1#12G, ¾"C. Do not share neutrals.
- K. Use conductor not smaller than 14 AWG for control circuits, provided by Electrical Contractor.
- L. Support communication cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.
- M. Use suitable cable fittings and connectors.
- N. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- O. Clean conductor surfaces before installing lugs and connectors.
- P. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- Q. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and larger.
- R. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- S. Branch circuits may be combined up to 6 circuits in a homerun conduit. Electrical Contractor shall be responsible for derating of conductors as required by N.E.C. Do not share neutrals.
- T. Use piercing connector with insulating covers for conductor splices and taps, 8 AWG and larger.

- U. Where the armor of type AC cable terminates, a fitting shall be provided to protect the wiring from abrasion. An approved bushing shall be provided between the conductors and the armor.
- V. Type MC cable shall be supported and secured at intervals not exceeding 4'-0".
- W. Fittings used for MC cable shall be identified for such use.
- X. AC/MC cable shall not be used for home runs to receptacle or distribution panels.
- Y. Between support, hangers and termination no more than 3" deflection from the bottom of the cable to a horizontal line between the support/hanger or termination.

3.3 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.4 FIELD QUALITY CONTROL

- A. Testing: Perform the following field quality control tests in accordance with Division 26 section "Electrical Testing"
 - 1. Description: Test all feeders rated 100 A and above.
 - 2. Visual and Mechanical Inspection
 - a. Inspect cables for physical damage and proper connection in accordance with the one line diagram.
 - b. Test cable mechanical connections with an infrared survey.
 - c. Check cable color-coding against project Specifications and N.E.C. requirements.
 - 3. Electrical Tests
 - a. Perform insulation resistance test on each conductor with respect to ground and adjacent conductors. Applied potential to be 1000 volts dc for 1 minute.
 - b. Perform continuity test to insure proper cable connection.
 - 4. Test Values
 - a. Minimum insulation resistance values shall be not less than fifty mega-ohms.
- B. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION

GROUNDING AND BONDING

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.
- B. Related Sections include the following:
 - 1. Division 26 Section "Electrical General Requirements".
 - 2. Division 26 Section "Conductors and Cables".

1.3 REFERENCES

- A. ASTM B 3: Specification for Soft or Annealed Copper Wire.
- B. ASTM B 8: Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard or Soft.
- C. ASTM B 33: Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes.
- D. ASTM B 187: Specification for Copper, Bus Bar, Rod, and Shapes and General Purpose Rod, Bar, and Shapes.
- E. IEEE 81: Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.

- F. IEEE 142: Grounding of Industrial and Commercial Power Systems.
- G. IEEE 1100 – 1992: Recommended Practice for Powering and Grounding Sensitive Electronic Equipment.
- H. IEEE C2: National Electrical Safety Code.
- I. NETA MTS – 2001: Maintenance Testing Specifications.
- J. NFPA 70: National Electrical Code.
- K. NFPA 70B: Recommended Practice for Electrical Equipment Maintenance.
- L. NFPA 780: Lightning Protection Code.
- M. TIA/EIA 607: Commercial Building Grounding and Bonding Requirements Standard.
- N. UL 96: Lightning Protection Components.
- O. UL 467: Grounding and Bonding Equipment.
- P. UL 486 A: Wire Connectors and Soldering Lugs for Use with Copper Conductors.
- Q. UL 486B: Wire Connectors for Use with Aluminum Conductors.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Data: For the following:
 - 1. Ground rods.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- D. Field Test Reports: Submit written test reports to include the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
 - 4. Indicate overall system resistance to ground.
 - 5. Indicate overall Telecommunications system resistance to ground.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 26 "Electrical General Requirements".
- B. Accurately record actual locations of grounding electrodes and connections to building steel.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Refer to specification section "Electrical Testing."

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 1. Comply with UL 467.
- C. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE C2.
- D. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.
- E. Comply with ANSI/TIA/EIA-607 "Standard for Commercial Building Grounding and Bonding Requirements for Telecommunications".
- F. Comply with ANSI/IEEE 1100 -1992 "Powering and Grounding Sensitive Electronic Equipment".

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Grounding Conductors and Cables:
 - a. Refer to Division 26 Section "Conductors and Cables".
 - 2. Grounding Rods:
 - a. American Electric-Blackburn.
 - b. Apache Grounding/Erco Inc.
 - c. Chance/Hubbell.
 - 3. Mechanical Connectors:
 - a. American Electric-Blackburn.
 - b. Burndy.
 - c. Chance/Hubbell.
 - 4. Exothermic Connections:
 - a. Cadweld.

2.2 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Division 26 Section "Conductors and Cables."
- B. Material: Aluminum, copper-clad aluminum, and copper.
- C. Equipment Grounding Conductors: Insulated with green-colored insulation.
- D. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe. On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.
- E. Grounding Electrode Conductors: Stranded cable.

- F. Underground Conductors: Bare, tinned, stranded, copper unless otherwise indicated.
- G. Bare Copper Conductors: Comply with the following:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Assembly of Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
- H. Copper Bonding Conductors: As follows:
 - 1. Bonding Conductor: Stranded copper conductor; size per the NEC.
 - 2. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; size per the NEC.
 - 3. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; size per the NEC.
- I. Aluminum Bonding Conductors: As follows:
 - 1. Bonding Conductor: Stranded aluminum conductor; size per the NEC.
 - 2. Bonding Jumper: Aluminum tape, braided bare aluminum conductors, terminated with aluminum ferrules; size per the NEC.
- J. Ground Conductor and Conductor Protector for Wood Poles: As follows:
 - 1. No. 4 AWG minimum, soft-drawn copper conductor.
 - 2. Conductor Protector: Half-round PVC or wood molding. If wood, use pressure-treated fir, or cypress or cedar.
- K. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulators.
- L. Telecommunications Main Grounding Busbar (TMGB)
 - 1. 48" (min) x 4" x 1/4" tin plated, copper busbar with three rows of 1/4 x 20 tapped holes 3" on center.
- M. Telecommunications Grounding Busbar (TGB)
 - 1. 12" (min) x 2" x 1/4" tin plated, copper busbar with two rows of 1/4 x 20 tapped holes 3" on center.
- N. Telecommunications Bonding Backbone (TBB)
 - 1. Minimum No. 2 AWG insulated stranded copper.
- O. Telecommunications Bonding Conductors
 - 1. Minimum No. 6 AWG insulated stranded copper.

2.3 CONNECTOR PRODUCTS

- A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.
- C. Welded Connectors: Exothermic-welded type, in kit form, and selected for the specific application per manufacturer's written instructions.
- D. Compression-Type Connectors: Pure, wrought copper, per ASTM B187.

2.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel.
 - 1. Size: 5/8 (16 mm) in diameter.
 - 2. Length: 120 inches (3000 mm).
- B. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Provide handholes as specified in Division 2 Section "Underground Ducts and Utility Structures."

PART 3 - EXECUTION

3.1 EQUIPMENT GROUNDING

- A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
- B. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.
- C. Underground Grounding Conductors: No. 2/0 AWG minimum. Bury at least 24 inches (600 mm) below grade or bury 12 inches (300 mm) above duct bank when installed as part of the duct bank.
- D. In raceways, use insulated equipment grounding conductors.
- E. Install equipment grounding conductors in all feeders and circuits. Terminate each end on suitable lugs, bus or bushing.
- F. Busway Supply Circuits: Install insulated equipment grounding conductor from the grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.
- G. Computer Outlet Circuits: Install insulated equipment grounding conductor in branch-circuit runs from computer-area power panels or power-distribution units.
- H. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate grounding conductor from raceway and from panelboard grounding terminals. Terminate at the isolated equipment ground bus of the source panelboard unless otherwise indicated.
- I. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply raceway with a nonmetallic raceway fitting

listed for the purpose. Install fitting where raceway enters enclosure, and install a separate equipment grounding conductor. Isolate equipment grounding conductor from raceway and from panelboard grounding terminals. Terminate at the isolated ground bus in the circuit's overcurrent device enclosure unless otherwise indicated.

- J. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.
- K. Air-Duct Equipment Circuits: Install an equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct.
- L. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate equipment grounding conductor to each electric water heater, heat-tracing, and antifrost heating cable. Bond conductor to heater units, piping, connected equipment, and components.
- M. Metal Poles Supporting Outdoor Lighting Fixtures: Provide a grounding electrode in addition to installing a separate equipment grounding conductor with supply branch-circuit conductors.
- N. Verify specific equipment grounding requirements with the manufacturer's recommendations.

3.2 CONNECTIONS

- A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.
 - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- B. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding Conductor Terminations.
- D. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and larger.
- E. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- F. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a

grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.

- G. Connections at Test Wells: Use compression-type connectors on conductors and make bolted- and clamped-type connections between conductors and ground rods.
- H. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.
- I. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- J. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.3 INSTALLATION

- A. Equipotential Ground: Interconnect grounding electrodes to form one, electrically continuous, equipotential grounding electrode system. Grounding electrodes to be interconnected include:
 - 1. Ground rods.
 - 2. Counterpoise ground.
 - 3. Ufer ground.
 - 4. Lightning protection system.
 - 5. Metal water service pipe.
 - 6. Plate electrode.
- B. Ground Rods: Install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes.
 - 1. Verify that final backfill and compaction has been complete before driving ground rods.
 - 2. Drive ground rods until tops are 2 inches (50 mm) below finished floor or final grade, unless otherwise indicated.
 - 3. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make connections without exposing steel or damaging copper coating.
- C. Counterpoise Ground:
 - 1. Ground the steel framework of the building with a driven ground rod at the base of every corner column and at intermediate exterior columns at distances not more than 60 feet (18 m) apart.

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2. Provide a grounding conductor (counterpoise), electrically connected to each ground rod and to each steel column, extending around the perimeter of the building. Use conductors not less than No. 2/0 AWG for counterpoise and for tap to building steel. Bury counterpoise not less than 18 inches (450 mm) below grade and 24 inches (600 mm) from building foundation.
- D. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to NFPA 70, Paragraph 250-81(c):
1. Provide a minimum of 20 feet (6 m) of bare copper conductor not smaller than No. 4 AWG. If concrete foundation is less than 20 feet (6 m) long, coil excess conductor within the base of the foundation.
 2. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts.
 3. Extend grounding conductor below grade and connect to building grounding grid or to a grounding electrode external to concrete.
- E. Common Ground Bonding with Lightning Protection System: Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor. Install in conduit where routed above grade.
- F. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage. Install in conduit where routed above grade.
- G. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.
- H. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
- I. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.
- J. Bond each aboveground portion of gas piping system upstream from equipment shutoff valve.
- K. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.
- L. Separately Derived AC Power Systems: Ground separately-derived ac power system neutrals including distribution transformers to grounding electrodes per NFPA 70.
- M. Packaged Engine Generator: Solidly ground the packaged engine generator neutral to the normal power source neutral. Do not ground the generator neutral to a separate grounding electrode.

- N. Install one test well for each service at the ground rod electrically closest to the service entrance. Set top of well flush with finished grade or floor.
- O. Grounding Bus:
1. Install grounding bus in the locations listed below and elsewhere as indicated:
 - a. Electrical equipment rooms.
 - b. Telephone equipment rooms.
 - c. Rooms housing service equipment.
 2. Use insulated spacer; space 1 inch (25.4 mm) from wall and support from wall 6 inches (150 mm) above finished floor, unless otherwise indicated.
- P. Equipment Grounding: Provide a permanent and continuous bonding of conductor enclosures, equipment frames, power distribution equipment ground busses, cable trays, metallic raceways, and other non-current carrying metallic parts of the electrical system.
- Q. Access Floor Pedestal Ground: Ground access floor pedestals where indicated.
1. Provide access floor pedestal ground plate where indicated.
 - a. Provide ½ inch (12 mm) thick x 4 inches (102 mm) wide x 12 inches (305 mm) long, soft copper bar, bolted construction with minimum six 3/8 inch (10 mm) diameter drilled holes 1 ½ inches (38 mm) on center.
 - b. Provide cadmium plated bolts, nuts and screws.
 - c. Mount plate on ¾ inch (19 mm) plywood with 2 inch (50 mm) wood spacers.
 2. Provide No. 2 AWG insulated ground conductor from pedestal to pedestal ground plate or building steel.
 3. Provide No. 2 AWG insulated ground conductor from pedestal ground plate to building steel.
 4. Tie wrap ground conductor as close to concrete floor as possible at every other pedestal.
 5. Clean all pedestals prior to welding.
- R. Access Floor Ground Grid: Install ground grid under access floors where indicated.
1. Construct grid of No. 2 AWG bare copper wire installed on 24 inch centers both ways.
 2. Bond each access floor pedestal to grid.
- S. Bond together each metallic raceway, pipe, duct and other metal object entering space under access floors. Bond to underfloor ground grid. Bond to pedestal ground plate or Bond to building steel. Use No. 2 AWG bare copper conductor.
- T. Provide grounding and bonding in patient care areas to meet requirements of NFPA 99 and ANSI/NFPA 70.
- U. Bond together metal siding not attached to grounded structure; bond to ground.
- V. Pool Structures: Provide a common bonding grid with a solid copper conductor not smaller than No. 8 AWG. Bond together the following:

1. All metallic parts of the pool or fountain structure, including reinforcing steel of the pool or fountain shell, coping stones, and deck.
2. All forming shells and mounting brackets of no-niche luminaries.
3. All metal fittings within or attached to the pool or fountain structure that are greater than 4 inches (100 mm) in any dimension and penetrate the pool or fountain structure more than one inch (25 mm).
4. Metal parts of electrical equipment associated with the pool or fountain water circulating system, including pump motors and metal parts of equipment associated with pool covers, including electric motors.
5. Metal sheathed cables and raceways, metal piping, and all fixed metal parts including fences, awnings, door and window frames, except those separated from the pool or fountain by a permanent barrier shall be bonded that are within the following distances of the pool:
 - a. Within 5 feet (1.5 m) horizontally of the inside walls of the pool.
 - b. Within 12 feet (3.7 m) measured vertically above the maximum water level of the pool, or any observation stands, towers, or platforms, or any diving structure.

W. Provide a flexible braid bonding jumper at each set of columns at expansion joints.

3.4 UNDERGROUND DISTRIBUTION SYSTEM GROUNDING

- A. Manholes and Handholes: Install a driven ground rod close to wall, inside manhole, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide a No. 1/0 AWG conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.
- B. Connections to Manhole Components: Connect all exposed-metal parts, such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.
- C. Pad-Mounted Transformers and Switches: Install two ground rods and counterpoise circling pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with transformers/substations by connecting them to underground cable and grounding electrodes. Use not less than a No. 2 AWG conductor for counterpoise and for taps to equipment ground pad. Bury counterpoise not less than 18 inches (450 mm) below grade and 6 inches (150 mm) from the foundation.

3.5 TELECOMMUNICATIONS GROUNDING

- A. Telecommunications Grounding System: The telecommunications grounding system shall consist of:
 1. Telecommunications Main Grounding Busbar (TMGB) located in the main telecommunications room near the telecommunications service entrance. Bond to the main building electrical grounding electrode system via a No. 3/0 AWG copper ground conductor.

2. A Telecommunications Grounding Busbar (TGB) in each telecommunications room, cabinets, etc.
 3. A Telecommunications Bonding Backbone (TBB) tying together the TMGB and each TGB.
 4. Bonding of all equipment racks, raceways, non-current carrying metallic equipment and surge protection devices within the telecommunications room to the TGB's or TMGB using approved bonding conductors. Each piece of equipment shall be bonded individually directly to the ground bus.
- B. All bonding connections shall be installed at an accessible location for inspection and maintenance.
 - C. All telecommunications bonding connections shall be of an approved mechanical type connection. Do not use exothermic welds unless specifically indicated on the Drawings.
 - D. The physical routing shall, in general, follow the same path as the backbone cable system.
 - E. Bond each TGB directly to the building steel with a No. 6 AWG conductor.
 - F. Do not use TGB's as a power system ground connection unless specifically noted on the Drawings.
 - G. All bonding connectors and conductors shall be UL listed for the purpose intended.
 - H. Mount TMGB and TGB bus to backboard or wall using 2" standoff insulators.
 - I. Individually bond each piece of non-current carrying metallic equipment in the Telecommunications Room to the TGB.
 - J. Install continuous cable from the TMGB to the furthest TGB. Bond all TGB's to TBB with bare No. 6 AWG copper ground conductor and T-tap grounding hardware.
- 3.6 FIELD QUALITY CONTROL
- A. Testing: Perform the following field quality control tests in accordance with Division 26 section "Electrical Testing"
 1. Inspect grounding and bonding system conductors and connections for tightness and proper installation and for compliance with the Drawings and Specifications.
 2. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
 - a. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal.
 - b. Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - c. Perform tests, by the fall-of-potential method according to IEEE 81. Instrumentation utilized shall be as defined in Section 12 of IEEE 81 and shall be specifically designed for ground impedance testing. Provide sufficient spacing so that curves flatten in the 62% area of the distance between the item under test and the current electrode.

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- d. Perform ground-impedance measurements utilizing either the intersecting curves method of the slope method. (Ref. Nos. 40 and 41 in IEEE Std. 81).
 - e. Equipment Grounds: Utilize two-point method of IEEE 81. Measure between equipment ground being testing and known low-impedance grounding electrode or system.
3. Provide drawings locating each ground rod and ground rod assembly and other grounding electrodes, identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- a. Equipment Rated 500 kVA and Less: 10 ohms.
 - b. Equipment Rated 500 to 1000 kVA: 5 ohms.
 - c. Equipment Rated More Than 1000 kVA: 3 ohms.
 - d. Substations and Pad-Mounted Switching Equipment: 5 ohms.
 - e. Manhole Grounds: 10 ohms.
 - f. The telecommunications grounding system shall have a maximum resistance of 1 ohm as measured from the TMGB ground to earth ground.
4. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

****END OF SECTION****

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.
 - 2. Nonmetallic slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - 3. Nonmetallic slotted channel systems. Include Product Data for components.
 - 4. Equipment supports.
- C. Welding certificates.

1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

1.7 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.

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- b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
- 3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
- 4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
- 5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
- 6. Channel Dimensions: Selected for applicable load criteria.
- B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c., in at least 1 surface.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. Fabco Plastics Wholesale Limited.
 - d. Seasafe, Inc.
 - 3. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
 - 4. Fitting and Accessory Materials: Same as channels and angles.
 - 5. Rated Strength: Selected to suit applicable load criteria.
- C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel or stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 5 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.
- E. Support all electrical items independently of supports provided by the other trades.
- F. Support conduits and boxes using steel conduit straps or 1/4-inch minimum diameter threaded rod hangers. Suspended ceiling hangers or hanger wire shall not be used (except to support flexible metallic conduit and manufactured wiring systems).
- G. Support cable trays with support brackets or 3/8" diameter minimum threaded rod hangers at intervals not exceeding 8'-0" for straight runs. Additional supports shall be provided at tray fittings.
- H. Hangers shall be of sufficient strength that their deflection at mid span does not exceed 1/240 of the hanger span length after the cables are installed.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

4. To Existing Concrete: Expansion anchor fasteners.
 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 7. To Light Steel: Sheet metal screws.
 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.
 - E. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
 - F. Obtain permission from Architect/Engineer before using powder-actuated anchors.
 - G. Obtain permission from Architect/Engineer before drilling or cutting structural members.
 - H. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
 - I. Install surface-mounted cabinets and panelboards with minimum of four anchors.
 - J. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch (25 mm) off wall.
 - K. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
 - L. The Contractor shall replace all supports and channels that sag, twist, and/or show signs of not providing proper structural support, to the equipment, it is intended for, as determined by the Owner and Architect/Engineer. All costs associated with replacing supports and steel channels shall be incurred by the Contractor.
- 3.3 INSTALLATION OF FABRICATED METAL SUPPORTS
- A. Comply with installation requirements in Division 5 Section "Metal Fabrications" for site-fabricated metal supports.
 - B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
 - C. Field Welding: Comply with AWS D1.1/D1.1M.
- 3.4 CONCRETE BASES
- A. Provide concrete bases for all floor mounted electrical equipment.

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- B. Provide concrete bases for all exterior, grade level electrical equipment, and where indicated.
- C. Base/Pad Construction:
 - 1. Construct per manufacturer's recommendations for particular equipment, including suggested piers and dowel rods.
 - 2. Construct concrete bases for primary and secondary power distribution equipment per requirements of the electrical utility, where submitted for its review.
- D. Anchor equipment to base per both supports and equipment manufacturer's instructions.
- E. Coordinate conduit openings and sleeve locations in base with requirements of equipment to be supported.
 - 1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of the base.
 - 2. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

****END OF SECTION****

RACEWAYS AND BOXES

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. Related Sections include the following:
 - 1. Division 26 Section, "Basic Electrical Materials and Methods" for exterior ductbanks, manholes, and underground utility construction.
 - 2. Division 7 Section, "Through-Penetration Firestop Systems"
 - 3. Division 26 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings, and for access floor boxes and service poles.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. FMC: Flexible metal conduit.
- D. IMC: Intermediate metal conduit.

- E. LFMC: Liquidtight flexible metal conduit.
- F. LFNC: Liquidtight flexible nonmetallic conduit.
- G. RNC: Rigid nonmetallic conduit.
- H. PVC: Polyvinyl Chloride.
- I. HDPE: High Density Polyethylene.

1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Manufacturer Seismic Qualification Certification: Submit certification that enclosures, cabinets, accessories, and components will withstand seismic forces defined in Division [16][26] Section "Electrical Supports and Seismic Restraints." Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
 - b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.
- C. All work in natatorium/pool area shall be in accordance with N.E.C. article 680, "Swimming Pools, Fountains, and Similar Installations."

1.6 COORDINATION

- A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 METAL CONDUIT AND TUBING

A. Manufacturers:

1. AFC Cable Systems, Inc.
2. Alflec Inc.
3. Allied Tube Triangle Century.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. International Metal Hose.
6. Electri-Flex Co
7. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
8. LTV Steel Tubular Products Company – Manhattan/CDT/Cole-Flex.
9. Maverick.
10. O-Z Gedney; unit of General Signal.
11. Wheatland.

B. Rigid Steel Conduit: ANSI C80.1.

C. IMC: ANSI C80.6.

D. EMT and Fittings: ANSI C80.3.

1. Fittings: Steel set-screw type.

E. LFMC: Flexible steel conduit with PVC jacket.

F. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

2.3 FIRE ALARM EMT

A. Manufacturers:

1. Allied Tube Triangle Century.
- B. EMT conduit with bright red topcoat; Fire Alarm EMT.
- C. EMT and Fittings: ANSI C80.3.

2.4 NONMETALLIC CONDUIT AND TUBING

A. Manufacturers:

1. American International.

2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corp.
4. Cantex Inc.
5. Certainteed Corp.; Pipe and Plastics Group.
6. Condux International.
7. ElecSys, Inc.
8. Electri-Flex Co.
9. Integral.
10. Kor-Kap.
11. Lamson and Sessions: Carlon Electrical Products.
12. Manhattan/CDT/Cole-Flex.
13. RACO; Division of Hubbell, Inc.
14. Scepter.
15. Spiralduct, Inc./AFC Cable Systems, Inc.
16. Thomas & Betts Corporation.

- B. ENT: NEMA TC 13.
- C. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.
- D. ENT and RNC Fittings: NEMA TC 3; match to conduit or tubing type and material.
- E. LFNC: UL 1660.
- F. HDPE: UL 651, ASTM D 3350, ASTM D 1248 Schedule 40.

2.5 METAL WIREWAYS

- A. Manufacturers:
 1. Hoffman.
 2. Square D.
- B. Material and Construction: Sheet metal sized and shaped as indicated, NEMA 1.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

- E. Wireway Covers: Hinged type.
- F. Finish: Manufacturer's standard enamel finish.

2.6 NONMETALLIC WIREWAYS

- A. Manufacturers:
 - 1. Hoffman.
 - 2. Lamson & Sessions; Carlon Electrical Products.
- B. Description: Fiberglass polyester, extruded and fabricated to size and shape indicated, with no holes or knockouts. Cover is gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections are flanged, with stainless-steel screws and oil-resistant gaskets.
- C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
- D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- E. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

2.7 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating and ivory finish.
 - 1. Manufacturers:
 - a. Airey-Thompson Sentinel Lighting; Wiremold Company (The).
 - b. Panduit.
 - c. Walker Systems, Inc.; Wiremold Company (The).
 - d. Wiremold Company (The); Electrical Sales Division.
- B. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.

2.8 BOXES, ENCLOSURES, AND CABINETS

- A. Sheet Metal Outlet and Device Boxes: NEMA OS 1. Shall be used within walls or ceiling.
- B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover. Shall be used in all exposed, non-recessed, locations.
- C. Nonmetallic Outlet and Device Boxes: NEMA OS 2. Shall be used in corrosive areas.
- D. Floor Boxes: Cast metal, fully adjustable, rectangular.
- E. Floor Boxes: Nonmetallic, nonadjustable, round.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

- G. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover. Shall be used in areas exposed to water.
- H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- I. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.9 FACTORY FINISHES

- A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.
- B. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors Applications:
 - 1. Exposed: Rigid steel or IMC.
 - 2. Concealed: Rigid steel or IMC.
 - 3. Underground, Single Run: RNC.
 - 4. Underground, Grouped: RNC.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 6. Boxes and Enclosures: NEMA 250, Type 3R.
- B. Indoor Applications:
 - 1. Exposed, Not Subject to Physical Damage in non-finished areas: EMT.
 - 2. Exposed, Not Subject to Severe Physical Damage in non-finished areas: EMT.
 - 3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit up to 10'-0" above finished floor. Includes raceways in the following locations:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - 4. Concealed in Ceilings and Interior Walls and Partitions: EMT.

5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 6. Damp or Wet Locations: IMC.
 7. Raceways Embedded in Concrete Above Grade: EMT or Rigid Steel.
 8. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: EMT.
 9. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: EMT.
 10. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: EMT.
 11. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.
- C. Minimum Raceway Size: 1/2-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
 2. Rigid Steel Conduits: Use only fittings approved for use with that material.
 3. EMT Conduits: Use steel set-screw fittings.
- E. Do not install aluminum conduits embedded in or in contact with concrete.
- 3.2 INSTALLATION
- A. Install conduit in accordance with NECA "National Electrical Installation Standards".
 - B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
 - C. Complete raceway installation before starting conductor installation.
 - D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
 - E. Install temporary closures to prevent foreign matter from entering raceways.
 - F. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above the finished slab.
 - G. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.
 - H. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
1. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.

- I. Raceways Embedded in Slabs:
 - 1. Raceways embedded in slabs shall be limited to above grade concrete decks. Embedded conduit shall be limited to servicing floor boxes and equipment located in open spaces away from accessible walls.
 - 2. Install in middle 1/3 of slab thickness where practical and leave at least 2 inches (50 mm) of concrete cover.
 - 3. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
 - 4. Space raceways laterally to prevent voids in concrete.
 - 5. Run conduit larger than 1-inch trade size (DN 27) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 6. Conduits shall run flat. Do not allow conduits to cross.
- J. Raceways installed under slab on grade: Use Schedule 40 nonmetallic conduit with rigid steel conduit sweeps, route conduits a minimum of 6" below bottom of slab.
- K. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
 - 1. Run parallel or banked raceways together on common supports.
 - 2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- L. Join raceways with fittings designed and approved for that purpose and make joints tight.
 - 1. Use insulating bushings to protect conductors.
- M. Tighten set screws of threadless fittings with suitable tools.
- N. Terminations:
 - 1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
 - 2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
- O. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.
- P. Provide pull string and 25% spare capacity in every branch circuit conduit.

- Q. Telephone and Signal System Raceways, 2-Inch Trade Size (DN 53) and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet (45 m) and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.
1. Electrical conduit (LB's) are not permitted.
 2. Conduits shall have no more than two 90 degree bends between pull points or pull boxes.
 3. Conduits shall contain no continuous sections longer than 100 ft. without a pull point/box.
 4. The bend radius of conduit must be at least 6 times the internal diameter for a conduit 2 inches or less and a radius of 10 times the diameter for a conduit greater than two inches.
 5. All conduit ends shall have an insulated bushing.
- R. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where otherwise required by NFPA 70.
- S. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches (150 mm) above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.
- T. Flexible Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.
- U. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.
- V. Set floor boxes level and flush with finished floor surface.
- W. Set floor boxes level. Trim after installation to fit flush with finished floor surface.
- X. Install hinged-cover enclosures and cabinets plumb. Support at each corner.
- Y. Do not route feeders across roof.
- Z. Provide a pull box (a handhole for outdoor applications) for each conduit run that exceeds 250 feet. Provide two pull boxes (handholes for outdoor applications) for runs that exceed 500 feet.
- AA. Conduit run in natatorium/pool area shall be EMT with compression fittings, and painted by the painting contractor (corrosion treatment paint per Architect's requirements).

- BB. Provide bonding of the pool structure/equipment per N.E.C. article 680-22. Coordinate with the pool contractor.
- CC. Route conduits in finished areas with exposed ceilings at underside of structural deck or as high as possible.
- DD. Conduits that route through, to, or from a hazardous classified space (Class I or II) shall have proper seal offs when exiting or entering the hazardous classified space.
- EE. Outlet boxes within hazardous locations shall be of the proper class and division as noted in the N.E.C.
- FF. Offset outlet boxes on opposite sides of common walls to prevent sound transmission between adjoining rooms.
- GG. Firestop raceways passing through rated walls and floors in accordance with Division 07 specifications. See architectural drawings for locations of rated assemblies.

3.3 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.4 CLEANING

- A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

****END OF SECTION****