Troy School District

Bond Projects BP#31

PROJECT MANUAL

Issued: December 17, 2020

Barton Malow BUILDERS

TMP ARCHITECTURE

SECTION 00010
PROJECT MANUAL
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- Division 0 Conditions of The Contract and Division 1 General Requirements are found in the Project Manual, included herein

Project Manual issued by Barton Malow Company dated December 18. 2020
TMP Associates Technical Specifications dated December 18. 2020
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SECTION 00015
Listing of Drawings

LIST OF DRAWINGS

See Title Sheets TS.1

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** – **Bond Projects BP#23** project in **Troy, MI**

PROJECT:	**Troy School District** **Bond Projects BP#23**
CONSTRUCTION MANAGER:	**Barton Malow Company** **1140 Rankin Drive** **Troy, MI 48083** **Larry Bukowski** **Phone: 248.914.4240** **Email: Larry.Bukowski@bartonmalow.com**
DIRECT ALL QUESTIONS TO:	**Josh Eisenman** **Phone: 586.651.2658** **Email: Josh.Eisenman@bartonmalow.com**
OWNER:	**Troy School District** **1140 Rankin Drive** **Troy, MI 48083**
ARCHITECT:	**TMP Architecture** **1191 W. Square Lake Road** **Bloomfield Hills, MI 48302** **Phone: (248) 338-4561**

SECTION 00100
ADVERTISEMENT TO BID

Troy School District requests Bid Proposals for Troy School District – Bond Projects BP#23. Bid Proposals will be received electronically through Building Connected on Thursday January 14th at 2:00 PM EST. All Proposals shall be submitted through Building Connected, for instructions on how to submit a bid please follow this link: https://buildingconnected-community.force.com/s/article/How-to-submit-your-bid-directly-through-BuildingConnected

1. Proposals shall be based on the requirements set forth in the Project Manual by Barton Malow Company dated December 18, 2020; the bid set drawings issued by TMP Architecture on December 18, 2020 and the specifications manual dated December 18, 2020.

2. Link to the Barton Malow Public Plan room:
https://app.buildingconnected.com/public/55a1292ff1a96708004a19dc

3. Accepted Bidders will be required, as a condition precedent to award of Contract, to furnish in the amount of 100% of the contract price, satisfactory Performance Bond and Payment Bond and Certificates of Insurance as required in the Project Manual.

4. Unless otherwise specifically set forth in Section 00880 of the Project Manual, this Project is subject to state sales and/or use taxes and Bidder is required to include such taxes in its Bid Proposal.

5. Barton Malow Company has been contracted by the Owner in the capacity of Construction Manager for the Project, and as such has the rights and obligations set forth in its contract with the Owner for those services and shall act as representative of the Owner to the extent required/allowed under its Owner contract.

6. Bid Proposals will be publicly opened Thursday January 14th at 2:00 PM EST, evaluated by the Owner and Barton Malow Company, 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.

7. A pre-bid conference will be held January 5, 2021 at 11:00 AM EST starting at Wass Elementary and then later moving on to Hamilton Elementary.

8. Bid Proposals shall be submitted through Building Connected. 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, an OSHA Form 300 for the most recent completed year, their worker's compensation Experience Modification Rate (EMR) factor, familial disclosure form, Iran sanctions form, and any other information required in the Instructions to Bidders. Bidders shall not withdraw Bid Proposals for a period of Sixty (60) Days after date for receipt of Bid Proposals.

9. The successful Bidder(s) will be required to enter into an agreement with **Owner** on the Agreement Form identified in Section 00500 of the Project Manual.

10. The right to reject any or all Bid Proposals, either in whole or in part, or to waive any informalities or irregularities therein is reserved by the Owner**.**

11. All Bid Proposals shall be accompanied by the sworn statement included in Section 00410 of the Project Manual, in accordance with MCL 380.1267, disclosing any familial relationship that exists between the owner(s) or any employee of the Bidder and any member of the board of trustees. Bid Proposals that do not include this sworn and notarized disclosure statement shall not be accepted.

BARTON MALOW COMPANY

END OF SECTION 00100

SECTION 00200
INSTRUCTION TO BIDDERS

1. BIDDING PROCEDURE

1.1. FORM AND STYLE OF BIDS

1.1.1. Bid Proposals shall be submitted using Building Connected.

1.2. BID SECURITY

1.2.1. 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.

1.2.2. 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.

1.2.3. Bid bond form AIA Document A310 unmodified, is approved for use on this Project.

1.2.4. The bid security obliges shall be Troy School District and the amount of the bid security shall become its property in the event that the Bidder fails, within fifteen 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 00610. In such case, the bid security shall be forfeited to the Troy School District as liquidated damages, not as a penalty.

1.2.5. 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.

1.2.6. 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.

1.3. SUBMISSION OF BIDS

1.3.1. All Barton Malow K-12 and Community College projects can be bid electronically. Visit the Barton Malow plan room to see all of our projects out for bid. Please contact the Barton Malow project teams for additional information.

1.4. MODIFICATION OR WITHDRAWAL OF BID PROPOSAL

1.4.1. With electronic sealed bidding, you can ensure that all bids are kept confidential until the bid due date and time. Subcontractors will be able to submit and revise their bids right up to the bid due date and time, but no revisions or new bids will be accepted after the deadline has passed. Click here for additional information on electronic sealed bidding.

1.5. OPENING OF BIDS

1.5.1. Bid Proposals received on time will be opened publicly

1.5.1.1. Bid Proposals shall be held open and irrevocable for forty-five (45) days after the date for receipt of bids.

1.6. REJECTION OF BIDS

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

1.7. ACCEPTANCE OF BID (AWARD)

1.7.1. 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.

1.7.2. The Troy School District shall have the right to accept Alternates in any order or combination and to determine the low Bidder based on the sum of the Base Bid, Voluntary Alternates and Alternates accepted.

2. DEFINITIONS

2.1. 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.

2.2. "**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.

2.3. "**Agreement**" means the document defined in the Project Manual, including all other documents incorporated by reference in the Agreement.

2.4. "**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.

2.5. "**Architect**" means the person or entity listed in section 00030 of the Project Manual and may include professional engineers if so designated.

2.6. "**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.

2.7. 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.

2.8. "**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.

2.9. "**Bidding Documents**" means the Bidding Requirements, the Contract Documents, and the Reference Documents collectively.

2.10. A "**Bid Package**" means a series of Bid Categories that are released for bidding in the same set of Bidding Documents.

2.11. "**Bidding Requirements**" include the Advertisement to Bid, Instructions to Bidders, Information Available to Bidders, and Bid forms and supplements.

2.12. "**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.

2.13. 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.

2.14. **"Contractor"** means the entity to which the Owner issues a contract for performance of the Work.

2.15. "**Day**" means calendar day, unless otherwise defined in the Contract Document.

2.16. "**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.

2.17. "**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.

2.18. "**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.

2.19. "**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.

2.20. "**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.

2.21. "**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.

2.22. "**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.

2.23. 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.

2.24. The "**Work**" includes all work and responsibilities performed or to be performed by Contractor under the Subcontract.

3. PART 2 - BIDDERS REPRESENTATIONS

3.1.1. 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.

3.2. BIDDER BY MAKING ITS BID REPRESENTS THAT:

3.2.1. Bidder has carefully read, reviewed and understands the Bidding Documents and its Bid Proposal is made in accordance therewith.

3.2.2. Bidder's Bid Proposal is based upon the materials, systems, equipment, terms and conditions required by the Bidding Documents without exception.

3.2.3. Bidder certifies that it:

3.2.3.1. has examined the Project site

3.2.3.2. has carefully reviewed the Bidding Documents

3.2.3.3. has compared its examination of the Project site with the Bidding Documents

3.2.3.4. 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

3.2.3.5. is familiar with weather conditions of the Project area

3.2.3.6. has taken account of all these factors in preparing and presenting its Bid Proposal.

3.2.4. Bidder further certifies that it

3.2.4.1. 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

3.2.4.2. has taken account of coordination of operations of others in its construction plans set forth in the Bid Proposal.

3.2.5. 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.

3.2.6. 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 considered in preparing its Bid Proposal.

4. BIDDING DOCUMENTS

4.1. COPIES

4.1.1. 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.

4.1.2. 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.

4.2. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

4.2.1. 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: Josh Eisenman
Address: 1140 Rankin
City, State, Zip: Troy**,** MI**,** 48098
Phone: 586.651.2658
Email: Josh.Eisenman@bartonmalow.com

4.2.2. 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

4.3. ADDENDA and/or BID CLARIFICATIONS

4.3.1. 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.

4.3.2. 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.

4.4. ALTERNATES

4.4.1. 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.

4.4.2. 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.

4.4.3. 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.

4.5. VOLUNTARY ALTERNATES

4.5.1. 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.

4.6. UNIT PRICES

4.6.1. 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.

4.6.2. 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.

4.7. NO DISCRIMINATION

4.7.1. 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.

4.7.2. 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.

4.8. 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.

4.9. 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.

5. POST BID INFORMATION

5.1. POST BID INFORMATION

5.1.1. 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:

5.1.1.1. 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.

5.1.1.2. Detailed cost breakdown of the Bidder's Bid Proposal including labor, equipment and material unit prices.

5.1.1.3. A list of names of the Subordinate Parties proposed for the principal portions of the Work.

5.1.1.4. The proprietary names and suppliers of principal items or systems of materials and equipment proposed for the Work.

5.1.1.5. 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.

5.1.1.6. Commitment to construction schedules, identification of items requiring long lead deliveries and manpower information in accordance with Section 00230 of the Project Manual.

5.1.1.7. Signed safety program compliance, as described in the Contract Documents

5.1.2. 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.

5.1.3. 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.

5.1.4. 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 scope of work includes new construction of a 72,000 sq. ft. preschool building. 26 classrooms, school's administration/office area, gross motor room, and kitchen. The exterior will include several parking lots, sidewalks and landscaping. Specific Bid Category/Work Scope descriptions are found in Section 00220.

1.3. SUMMARY OF THE BID CATEGORIES/WORK SCOPES

1.3.1. The following is a listing of Bid Categories for this project. 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

080000 Exterior Doors & Aluminum

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 Contractors 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. Contractors 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 turn 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 the form provided to Contractor by CM.

1.4.15. All Contractors 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 SCOPE

BID CATEGORY 080000 – ALUMINUM WINDOWS/ DOORS/ ENTRANCES

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all Demolition 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:

PART 1 - Division 00 Bidding Requirements	PART 2 - Complete
PART 3 - Division 01 General Requirements	PART 4 - Complete
PART 5 - Division 02 Existing Conditions	
PART 6 - 024119	PART 7 - Selective Demolition
PART 8 - Division 06 Woods, Plastics, and Composites	PART 9 -
PART 10 - 061000	PART 11 - Rough Carpentry
PART 12 - Division 07 Thermal and Moisture Protection	PART 13 -
PART 14 - 079200	PART 15 - Joint Sealants
PART 16 - Division 08 Openings	PART 17 -
PART 18 - 082250	PART 19 - FRP Doors
PART 20 - 084113	PART 21 - Aluminum Entrances and Storefronts
PART 22 - 087100	PART 23 - Door Hardware
PART 24 - 088000	PART 25 - Glazing
PART 26 - 089000	PART 27 - Louvers

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) **Safety:**
   a. Refer to Barton Malow's Safety Manual as well as the Safety and Loss Control Section 00810 of Project Manual for safety requirements on this project which includes but is not limited to the following:
      i. Mandatory safety orientation (approximately 1-2 hours)
      ii. Fall protection requirements – four feet minimum
      iii. Daily pre-task plans and plan of day is to be documented and safety meetings must be conducted
      iv. OSHA 30-hour course required for designated safety representatives
      v. Provide a full time non-working on-site safety representative when crew size increase to twenty (20) workers or more.
      vi. Provide PPE for all workers, including hardhat, safety glasses, high vis vest and gloves.
   b. Provide, install and maintain safe access to work areas including housekeeping for identifiable and non-identifiable items.
   c. Provide fire watch for all "hot work" operations. Complete Hot Work permit daily for each piece of welding or hot equipment inclusive of all fire protection safety prevention measures necessary.

i. Fire watch shall be continuous during field burning/cutting with acetylene gas torches/welding burning / cut off demo saw work for a minimum period of two (2) hours after the event for interior work and one (1) hour for exterior work after work process is completed. Subcontractor to ensure that NO FIRE HAZARD exists at all times and the Subcontractor shall provide means, method, techniques, sequence and procedure of abatement/demolition as required.

d. Provide ladders and baker scaffolding as necessary to safely access work.
e. Contractor to verify that all existing utilities have been properly shut off or disconnected prior to any demolition activities that might affect utilities.
f. Contractor to coordinate with Barton Malow, Owner, Building Management and all municipality entities any shut down of utilities.
g. Refer to Barton Malow's Mobilization and Ongoing Operations Guidelines which includes but is not limited to the following documents
   i. Coronavirus Questionnaire
   ii. Coronavirus Toolbox Talk
   iii. Site-Specific Emergency Action Plan

2) General Requirements:

a. Contractor shall visit the site and familiarize themselves with the project layout, existing conditions, site access, etc. and all other obstacles with the Work areas. Contractor is responsible for all means of setting up and relocating their equipment and materials to perform this Work as well as in conjunction with other trade contractors. There will be no additional compensation made for reason of omission or interpretation as it relates to the aforementioned required site visit.
b. All Applications for Payment and all supporting documents (including but not limited to lien waivers, sworn statements, and the like) for Contractor and its Subcontractors and suppliers, shall be in electronic format and shall be submitted using the Oracle Textura Payment Management (TPM) system. Contractor shall be responsible for the fees and costs owed associated with Contractor's use of TPM. Contractor shall include a similar provision in its Subcontracts and purchase orders. Fees to Contractors are calculated as 0.22% (22 basis points) of contract value (plus applicable taxes), with a maximum fee of $3,750. Fees to Contractors Subcontractors and suppliers are a fixed fee of $100 per sub-subcontractor or supplier contract. These fees must be carried within the Contractors Bid Proposal
c. Contractor acknowledges that means of removal of materials and products from the space and transport to dumpsters.
d. Provide daily cleanup of all work areas.
e. Provide all permits necessary for work. Provide intermediate inspection and final approval documentation from the relevant municipalities.
f. Protect existing surroundings to work areas and pathways to work areas.
g. Provide all costs for trucking and any associated fees or charges.
h. Provide all costs for equipment necessary to load and unload materials and equipment as well as hoisting needed for own work.
i. Provide detailed schedule for work immediately upon award of project. Schedule shall meet milestones as shown in the project schedule included in this manual. In order to maintain schedule, multiple crews may be required.
j. Due to limited space available for lay down, this Subcontractor shall plan on a timely delivery of material and removal of debris.
k. Contractor is required to attend a Pre-Job Coordination Meeting prior to beginning work. The meeting shall be attended by this Subcontractor and any of its contractors.
l. Include all pricing for receiving and handling of all materials as well as any necessary temporary storage.
m. The District reserves the right to award each building separately.
n. The Project will use BIM360 for documentation. Each Contractor is to include a $600 charge for using BIM360 as part of their base bid. Contractor will be invoiced directly at project start-up with payment submitted prior to the start of work.

3) Construction Requirements:

a. Furnish and install complete aluminum entrances, aluminum curtain walls, windows, sunscreens & related hardware, flush aluminum FRP doors/aluminum frames, door sweeps for a weather tight seal and glass including but not limited to all glazing, sealers, caulking and aluminum framing. Furnish and install all aluminum sills and break metal trim, interior and exterior.
b. Supply and install all glass and glazing required for this project in all doors (including, but not limited to FRP doors and aluminum doors), hollow metal doors, pre-finished wood doors, sidelights and aluminum windows, and as specified.
c. Furnish and install all finish hardware, thresholds, and construction cores. Doors must be prepped to receive Schlage Everest Interchangeable cores. Final keying will be done by the owner.
d. Contractor to provide plywood enclosure to the building at the end of each day if opening is not completely reinstalled. All openings are to be secured and weather tight at the end of each workday.
e. Remove tags and final clean all surfaces properly, after new doors, glass, panels and window systems are installed.
f. All aluminum frames and doors to be factory finished, as specified.
g. Demo of entrance doors and frames are to be coordinated with the security contractor. Security contractor shall demo existing security hardware before demo of the doors and frames begins.
h. Demo of doors and window systems at Hamilton are to be included in this contractor's work.
i. Any cutting and patching required for installation of new work shown or not shown on the contract documents for work of this bid category is the responsibility of this contractor.
j. Coordinate raceway and installation of low volt wiring for the reinstallation of all door security devices is the responsibility of this contractor.
k. Provide a final cleaning of new interior and exterior glazing & aluminum framing at the direction of the construction manager.
l. Complete hardware manufacturer's adjustment and inspections as may be specified.
m. Include prefinished aluminum louver to be glazed into storefront framing with grille and bird screen as shown on detail 1 on drawing AD.1
n. Verify frame size
o. Coordinate removal and reinstallation of pull stations called out in demolition note 4 with Electrical contractor

4) Temporary Protection Work Requirements:

a. Include temporary protection for any items that are not scheduled for removal during the demolition process. Should damage to any such property occur, it is the responsibility of this Contractor to repair property to like new condition or full replacement and all associated costs.

EXCLUDED FROM THIS CONTRACTOR'S WORK is:

1. Demolition of doors and window systems at Wass shown as demolition note 3A
2. Removal and replacement of roller shades
3. Removal and reinstallation of pull stations called out in demolition note 4
4. Reworking of condensate drains

SPECIAL CONSIDERATIONS:

1. Contractor shall furnish to Barton Malow all submittals within 10 business days of receipt of a Notice to Proceed.

END OF BID CATEGORY 080000 – ALUMINUM WINDOWS/ DOORS/ ENTRANCES

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
Bids Due		January 14, 2021
Contract Award		February 16, 2021
Construction Kickoff Meeting		February 18, 2021
Submittals and Shop Drawings	February 17, 2021	March 16, 2021
Spring Break	March 29, 2021	April 2, 2021
Last Day of School		June 16, 2021
Wass Construction	July 12, 2021	August 20, 2021
Hamilton Construction	June 21, 2021	August 20, 2021
Substantial Completion		August 20,2021
Punch List	August 23, 2021	September 17, 2021
Close Outs	August 23, 2021	September 17, 2021
First Day of School		August 31, 2021

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.

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 or 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

SWORN AND NOTARIZED FAMILIAL DISCLOSURE STATEMENT

FAMILIAR DISCLOSURE AFFIDAVIT

The undersigned, the owner or authorized office of the below–named contractor (the 'Contractor"), pursuant to the familial disclosure requirement provided in this proposals, hereby represents and warrants that, excepts as provided below, no familial relationship exists between the owner or key employee of the Contractor, and any member of the Troy School Board or the Troy School Superintendent. A list of the School District's Board of Education Members and its Superintendent may be found at http://www.troy.k12.mi.us.

List any Familial Relationships:

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 _____

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 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 the following page(s):

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 Harbor workers' 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.

END OF DOCUMENT PRO 15-14

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

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 Toolbox 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 handheld.

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

workday. 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**
Site-specific Safety Program, including substance abuse policy, hazard communication program, and Material Safety Data Sheets (MSDS)	Before on-site work begins
Toolbox Talk Reports	Weekly
Incident Reports (OSHA form 301or equivalent)	Within 24 hours of incident
Pre-Task/Daily Reports	Daily
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

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 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 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 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 firefighting 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 always remain accessible.

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 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 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)	xxx.xx		
	Subtotal		xxx.xx	
	OH&P @ 15%		xxx.xx	
Equipment, Materials, Supplies:				
Ace Hardware	xxx.xx			
Acme Products	xxx.xx			
Concrete Supplier		xxx.xx		
		xxx.xx		
	Subtotal		xxx.xx	
	OH&P @ 15 %		xxx.xx	
	Subtotal (1)			**xxx.xx**
Contractor Costs				
ABC Welding	xxx.xx			
XYZ Resteel		xxx.xx		
	Subtotal		xxx.xx	
	OH&P @ 5 %		xxx.xx	
	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 (10^{th}) of the month,

2.2.1.1.2. invoice for Work from the tenth (10^{th}) of last month to the tenth (10^{th}) 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. Final electronic copies are due to CM on or before the fifteenth (15^{th}) 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 Contractor**s** 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: **Troy School District – 2013 Bond Program – Series 2, Bid Package 23**

2.2.1.2. CM Job#: 140077

2.2.1.3. Architect Job#: 13165D, 13166A, 13172B, 13174F, 13175D

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. Contractors 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 electronically review and approve. CM will use Submittal Exchange 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.

	Required submit quantities:	
Submittal Type:	**Electronic[1]**	**Other**
.1 Shop Drawings – Structural Steel and all MEP	**1**	
.2 Shop Drawings – all other	**1**	
.3 Product Data – Structural Steel and all MEP	**1**	
.4 Product Data – all other	**1**	
.5 Samples	**1**	**4**
.6 Certificates[2]	**1**	
.7 Warranties / Guarantees[2]	**1**	
.8 Test Reports[2]	**1**	
.9 Close-Out Material: O & M Data[2]	**1**	

NOTES :
[1] ALL electronic submittals shall be in PDF format
[2] 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, and 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. WARRANTEES/GUARANTEES

4.5.1. Provide warrantees 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 re-submit 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. 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, the Electrical Contractor shall have completed layout drawings and provide to CM. 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 prints of the completed layout drawings to CM. CM will in turn distribute prints to each required Contractor to include Plumbing, Fire Protection and Electrical Work. Respective Contractors shall then layout their own routings. 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 <u>all</u> 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.

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 require 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 communicate with 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 sate 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 guard(s) 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 all 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 firefighting 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 that 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 that 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 providing an even finish to match adjacent surfaces and finishes, for continuous surfaces, refinishing to nearest intersection, for an assembly, and 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:

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		**For use by Owner**	
____ Accepted	_____Accepted as noted	____ Accepted	_____Accepted as noted
____ Not accepted	_____Received too late	____ Not accepted	_____Received too late
____ Insufficient data received		____ Insufficient data received	
By: _____		By: _____	
Date: _____		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 determines 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:

2013 BOND PROGRAM

HAMILTON ELEMENTARY SCHOOL (13160D)
WASS ELEMENTARY SCHOOL (13167E)

BID PACKAGE NO. 31

OWNER:

TROY SCHOOL DISTRICT
4400 Livernois
Troy, Mi. 48098

TMP PROJECT NOS.:13160D, 13167E

DATE: DECEMBER 16,2020

ISSUED FOR BIDS

ARCHITECT

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MECHANICAL & ELECTRICAL ENGINEER

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TABLE OF CONTENTS

END OF SECTION

LIST OF DRAWINGS

1.1 LIST OF DRAWINGS

A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the TITLE SHEET page of the separately bound drawing set titled BEMIS ELEMENTARY SCHOOL, COSTELLO ELEMENTARY SCHOOL, HILL ELEMENTARY SCHOOL, MARTELL ELEMENTARY SCHOOL, WATTLES ELEMENTARY SCHOOL, BOULAN PARK MIDDLE SCHOOL, LARSON MIDDLE SCHOOL, ATHENS HIGH SCHOOL, INTERNATIONAL ACADEMY EAST, dated October 9, 2019, and any subsequent Addenda and Contract modifications which may occur.

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 01.

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 that 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

ELECTRONIC 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 "Electronic Project Record Documents" for electronic 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 Manger.

   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; revision number for that section; school name(s) (where multiple schools are involved only); and description of file being submitted (submittal type).

1. Example: 079200-01-00_Watt, Wass_Joint Sealants_Product data.pdf.

2. Example: 123204-07-01_Prefabricated Casework_Shop Drawings.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. Also, an electronic version of this form is part of the upload process in Submittal Exchange.

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 from. 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 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. _____
_____ _____ _____	_____ _____ _____	CHECKER: _____ RESUB. _____ RESUB. NO. _____ TMP PROJECT NO._____

SPEC SECTION NO.	NO. PRINT	NO. SEPI	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
RR = REVISE AND SEND RECORD COPY
X = NOT APPROVED – RESUBMIT
NA = NO ACTION REQ'D

CONTRACTOR'S COMMENTS:

ARCHITECT'S COMMENTS:

_____
CONTRACTOR'S NAME

_____
SIGNATURE

cc: Owner
Consultant

ABBREVIATIONS

PART 1 - GENERAL

1.1 The following is a list of abbreviations utilized throughout the Contract Documents.

A

ABV.	Above
A.F.F.	Above Finish Floor
ABR.	Abrasive
ABS.	Absorbing
ACC.	Access
A.C.C.	Air Cooled Condenser
ACC.PNL.	Access Panel
A.V.	Acid Vent
A.W.	Acid Waste
AC.	Acoustic/Acoustical
AC.T.	Acoustic Tile
AC.INSUL.	Acoustical Insulation
A.D.A.	Americans with Disability Act.
ADD.	Addendum
ADDN.	Addition
ADDNL.	Additional
ADH.	Adhesive
ADJ.	Adjacent/ Adjustable
AGGR.	Aggregate
A.C.B.	Air Circuit Breaker
A/C	Air Conditioning
A.C.	Air Conditioner
A.C.C.	Air Conditioning Compressor
A.C.U.	Air Conditioning Unit
A.H.U.	Air Handling Unit
ALT.	Alternate
ALUM./AL.	Aluminum
AMT.	Amount
AMP.	Amphere
AMPL.	Amplifier
ANCH.	Anchor/Anchorage
A.B.	Anchor Bolt
&	And
L/AN.	Angleg
ANOD.	Anodized
APT.	Apartment
APR.	Approved
APPR.	Approximate
ARCH.	Architect Architectural
A-	Architectural Drawing Number
A.T.	Ash Tray
ASPH.	Asphalt
ASSY.	Assembly
@	At
AUTO.	Automatic
A.S.R.	Automatic Sprinkler Riser
AUX.	Auxiliary
AVG.	Average

B

B/B	Back-to-Back
B.F.P.	Back Flow Preventer
B.D.D.	Back Draft Damper
B.F.	Barrier Free
B.B.R.	Base Board Radiation
B.PL.	Base Plate
BSMT.	Basement
B.	Bath Room
BM.	Beam
BRG	Bearing
BR.	Bedroom
B.M.	Bench Mark
BT.	Bent
BETW.	Between
BEV.	Bevel
BIT.	Bituminous
B.I.	Black-iron
BLK.	Block
BD.	Board
BLR.	Boiler
BLR.F.	Boiler Feed
BLR.H.	Boiler House
B.S.	Both Side
B.W.	Both Ways
BOT.	Bottom
B.O.D.	Bottom of Duct
B.O.P.	Bottom of Pipe
BOT.EL.	Bottom Elevation
BLVD.	Boulevard
BDRY.	Boundry
BRKT.	Bracket
B.HP.	Brake Horsepower
BR.	Brass
BRKR.	Breaker
BRK.	Brick
B.T.U.	British Thermal Unit
BRZ.	Bronze
BLDG.	Building
B.L.	Building Line
B.M.S.	Building Management System
B.U.R.	Built-up Roofing
BN.	Bullnose
BLKHD.	Bulkhead
BULL.	Bulletin
B.A.	Burglar Alarm
BUZZ.	Buzzer

C

CAB.	Cabinet
C.U.H.	Cabinet Unit Heater
CAP.	Capacity
CPT.	Carpet
CSMT.	Casement
CSWRK.	Casework
CSG.	Casing
C.I.	Cast Iron
C.I.F.	Cast Iron Frame
C.I.P.	Cast Iron Pipe
CSTG.	Casting
CAT.NO.	Catalog Number
C.B.	Catch Basin
CLG.	Ceiling
C.D.	Ceiling Diffuser
CLG.HT.	Ceiling Height
CEM.	Cement
CEM.PLAS.	Cement Plaster
CTR.	Center
C.L.	Center Line
C/C	Center-to-Center
CER.	Ceramic
CER.T.	Ceramic Tile
CBD.	Chalkboard
CHAM.	Chamfer
CHG.	Change
C/CHAN.	Channel
CHKD. PL.	Checkered Plate
CH.W.R.	Chilled Water Return
CH.W.S.	Chilled Water Supply
CHD.	Chord
CIRCUM.	Circumference
CIR.	Circle/Circular
CIRC.	Circuit
CIRC.	Circulation
C.BR.	Circuit Breaker
C-	Civil Drawing Number
CL.	Class
CLRM.	Classroom
C.O.	Clean Out
CLR.	Clear
CLR. GL.	Clear Glass
CLR. W.GL.	Clear Wire Glass
COEF.	Coefficient
C.W.	Cold Water
COL.	Column
CO.	Company
COMPT.	Compartment
COMPO.	Composition
C.A.	Compressed Air
COMPR.	Compressor
CONC.	Concrete
C.M.U.	Concrete Masonry Unit

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. PARTN.	Demountable 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/ F.F.	Finish Floor
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

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

LTWT. CONC.	Lightweight Concrete
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.& PLAS.	Metal Lath And 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. PARTN.	Moveable Partition
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
PVMT.	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. ENAM.	Porcelain Enamel
POR.	Porous
PORT.	Portable
POS.	Position
P.I.V.	Post Indicator Valve
LBS. or #	Pounds
P.L.F.	Pounds Per Linear Foot

P.S.F.	Pounds Per Square Foot
P.S.I.	Pounds Per Square Inch
P.C.F.	Pounds Per Cubic Foot
P.P.	Power Panel
P/C	Precast
P.T.C.	Precast Terrazzo Receptor
PREFAB.	Prefabricated
PFN.	Prefinished
P.C.T./C.M.	Pressure Control Terminal/Control Module
P.G.	Pressure Gauge
P.R.G.	Pressure Relief Grille
P.R.V.	Pressure Reducing Valve
PRIM.	Primary
PROJ.	Project/ Projection
PROP.	Property/ Proposed
P.L.	Property Line
P.A.	Public Address
P.S.	Purse Shelf
P.B.	Push Button

Q

QTY.	Quantity
Q.T.	Quarry Tile
QTR.	Quarter
QTR.RD.	Quarter Round

R

RBT.	Rabbet
R.C.P.	Radiant Ceiling Panel
RAD. or R.	Radius
R.W.C.	Rain Water Conductor
R.R.	Railroad
RECV.	Receive/ Receiving
RECPT.	Receptacle
R.P.	Receptacle Panel
REC.	Recess
RECIRC.	Recirculation
RECT.	Rectangle / Rectangular
RED.	Reducer
RWD.	Redwood
REF.	Refer/Reference
REFL.	Reflected/Reflective
REFRIG.	Refrigerant
REFR.	Refrigerator
REG.	Register
RH.C.	Reheat Coil
REINF.	Reinforce/Reinforcing Reinforcement
R.H.	Relief Hood
REM.	Remove/ Removable
REP.	Repair
REQ'D.	Required
RESIL.	Resilient
RET.	Return
R.A.	Return Air
R.A.D.	Return Air Duct
R.A.F.	Return Air Fan
REV.	Revised/Revision
R.P.M.	Revolutions Per Minute
R.	Riser
R.H.	Right Hand
R.H.R.B.	Right Hand Reverse Bevel
R.O.W.	Right Of Way
RVT.	Rivet
RD.	Road
R.S.C.	Rolling Steel Curtain
RF.	Roof
R.C.	Roof Conductor
R.D.	Roof Drain
RF.H.	Roof Hatch
R.T.U.	Roof Top Unit
R.S.	Roof Sump
R.V.	Roof Ventilator
RFG.	Roofing
R.W.C.	Rain Water Conductor
RM.	Room
R.O.	Rough Opening
RND. or O	Round
R.H.M.S.	Round Head Machine Screw
R.H.W.S.	Round Head Wood Screw
R.T.	Rubber Tile

S

SAN.	Sanitary
S.N.D.	Sanitary Napkin Dispenser
S.N.R.	Sanitary Napkin Receptacle
SCHED.	Schedule
SCN.	Screen
STG.	Seating
SECT.	Section
SERV.	Service
S.S.	Service Sink
SHTHG.	Sheathing
SHT.	Sheet
SHT.MET.	Sheet Metal
SH. & P.	Shelf And Pole
SHWR.	Shower
S.C.R.	Shower Curtain Rod
S.DR.	Shower Door
SW.	Sidewalk
SIM.	Similar
SGL.	Single
SK.	Sink
S.D.	Soap Dispenser
S.C.	Solid Core
S.T.C.	Sound Transmission Class
S	South
SP.	Space
SPR.	Spare
SPKR.	Speaker
SPEC.	Specifications
S.D.	Splitter Damper
SPRYD.	Sprayed
SPKLR.	Sprinkler
SQ.	Square
S.F.	Square Feet/ Square Foot
STAG.	Staggered
ST.STL	Stainless Steel
STD.	Standard
SP.	Standpipe
S.P.	Static Pressure
STA.	Station
STM.	Steam
STL.	Steel
STL.PL.	Steel Plate
STIFF.	Stiffener
STO.FR.	Storefront
STOR.	Storage
ST.	Storm
STR.	Straight
ST.	Street
STRUCT.	Structural Drawing Number
S.G.F.T.	Structural Glazed Facing Tile
S.STL.	Structural Steel
SS.D.	Subsoil Drain
SS.D.C.	Subsoil Drain Connection
SUB.	Substation
S.A.G.	Supply Air Grille
S.D.	Supply Diffuser/ Duct
SUBST.	Substitute
S.A.R.	Supply Air Register
S.F.	Supply Fan
S.A.	Supply Air
S.A.D.	Supply Air Diffuser
SUPP.	Support
SURF.	Surface/Surfacing
SUSP.	Suspend/Suspension
SW.	Switch
SWBD.	Switchboard
SWGR.	Switchgear
SYM.	Symbol/Symmetrical
SYS.	System

T

T.BD.	Tackboard
TAN.	Tangent
TECH.	Technical

TEL.	Telephone
TEL.CAB.	Telephone Cabinet
TV	Television
TV.M.	Television Monitor
TEMP.	Temperature
TEMP.GL.	Tempered Glass
T.W.	Tempered Water
T.U.	Terminal Unit
TERR.	Terrazzo
T.B.	Test Boring
T.	Thermostat
THK.	Thick/Thickness
T.S.	Thickened Slab
M (1000)	Thousand
K (KIP)	Thousand Pounds
THD.	Thread/Threaded
THRESH.	Threshold
THRU.	Through
T.	Tile
T./TOIL.	Toilet
T.P.D.	Toilet Paper Dispenser
T.P.H.	Toilet Paper Holder
T & G	Tongue And Groove
T & B	Top & Bottom
T/C	Top Of Cover/Curb
T/EL.	Top Elevation
T/F	Top Of Footing
T/M	Top Of Masonry
T/P	To Of Pavement
T/R	Top of Rail
T/R	Top of Rim
T/S	Top of Steel
T/W	Top of Wall
T.B.	Towel Bar
T.D.	Towel Dispenser
T.D. & W.R.	Towel Dispenser & Waste Receptacle
T.G.	Transfer Grille
TRFR.	Transformer
TRAN.	Transom
T	Tread
T.D.	Trench Drain
T.S.	Tube Section
T.V.	Turning Vane
T.T.	Twin Tee
TYP.	Typical

U

U.C.	Undercut
U.G.	Underground
U.L.	Underwriters' Laboratories, Inc.
ULT.	Ultimate
UNFIN.	Unfinished
U.H.	Unit Heater
U.SUB.	Unit Substation
U.V.	Unit Ventilator
U.S.G.S.	United States Geological Survey
U.O.N.	Unless Otherwise Noted
U.S.A.	Untempered Supply Air
UR.	Urinal

V

VAC.	Vacuum
V.B.	Vacuum Breaker
V.C.O.	Vacuum Cleaner Outlet
V.BARR.	Vapor Barrier
VAR.	Variable
V.A.V.	Variable Air Volume
VARN.	Varnish
VNR	Veneer
V. PLAS.	Veneer Plaster
V.	Vent
V.T.R	Vent Thru Roof
VENT.	Ventilate/ Ventilation
V.I.F.	Verify In Field
VS.	Versus
VERT.	Vertical/Vertically
VERT.C.	Vertical Curve
VEST.	Vestibule
V.I.	Vibration Isolator
VNY.	Vinyl
V.C.T.	Vinyl Composition Tile
VIN.FAB.	Vinyl Fabric
V.R.S.	Vinyl Reducer Strip
VIT.	Vitreous
V.C.P.	Vitrified Clay Pipe
VOL.	Volume
V.D.	Volume Damper
V	Volts

W

WAINS.	Wainscot
W.CAB.	Wall Cabinet
W.CO.	Wall Cleanout
W.H.	Wall Hydrant
W/W	Wall-to-wall
W.V.	Wall Vent
WHSE.	Warehouse
W.F.	Wash Fountain
W.	Waste/Watts
W & V	Waste And Vent
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
W	West
W.B.	Wet Bulb
W.	Wide/Width
W-x-	Wide Flange Section
WT	Wide Flange Tee Section
W.O.	Window Opening
W.GL.	Wire Glass
W.M.	Wire Mesh
W/	With
W/O	Without
WD.	Wood
W.L.	Working Line
W.PT.	Working Point
W.I.	Wrought Iron

Y

YD.	Yard
Y.P.	Yield Point
Y.S.	Yield Strength
YR.	Year

Z

Z.C.	Zinc-Coated

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 that 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 that 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 or 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 that 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, which ever 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 that 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 that 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 that 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 a 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 that 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 1 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 15 and 16 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. Roofing: When modifying an existing roof and adding new penetrations comply with the following requirements:

1. Notify original roof manufacturer prior to beginning any work and comply with all manufacturer guidelines and requirements.

2. Provide original roof manufacturer with a brief description of the proposed work, including any required submittals.

3. Work shall not begin until written approval is received from original roof manufacturer.

4. Work must be done by an approved roofing manufacturer’s contractor.

5. Original roof manufacturer shall inspect all modifications to the original roof system.

B. Structural Elements: Do not cut and patch the following structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.
b. Bearing and retaining walls.
c. Structural concrete.
d. Structural steel.
e. Lintels.
f. Timber and primary wood framing.
g. Structural decking.
h. Stair systems.
i. Miscellaneous structural metals.
j. Shoring, bracing and sheeting.
k. Structural systems of special construction in Division 13 Sections.

C. 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. Air or smoke barriers.
c. Fire-protection systems.
d. Control systems.
e. Communication systems.
f. Conveying systems.
g. Electrical wiring systems.

h. Operating systems of special construction in Division 13 Sections.

D. 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. Water, moisture, or vapor barriers.

2. Membranes and flashings.

3. Exterior curtain-wall construction.

4. Equipment supports.

5. Piping, ductwork, vessels, and equipment.

6. Noise- and vibration-control elements and systems.

E. 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.

1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.

a. Processed concrete finishes.
b. Stonework and stone masonry.
c. Ornamental metal.
d. Matched-veneer woodwork.
e. Preformed metal panels.
f. Roofing.
g. Firestopping.
h. Window wall system.
i. Stucco and ornamental plaster.
j. Terrazzo.
k. Finished wood flooring.
l. Fluid-applied flooring.
m. Aggregate wall coating.
n. Wall covering.
o. Swimming pool finishes.
p. HVAC enclosures, cabinets, or covers.
q. Acoustical Ceilings
r. Carpeting

F. 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 that was 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 that 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 that 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 of 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. Demolition and removal of selected site elements.

3. Repair procedures for selective demolition operations.

B. Related Sections include the following:

1. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.

2. Division 23 Sections for demolishing, cutting, patching, or relocating mechanical items.

3. 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.

G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 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. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. 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. Ornamental metal.
b. Preformed metal panels.
c. Roofing.
d. Firestopping.
e. Window wall system.
f. Terrazzo.
g. Finished wood flooring.
h. Swimming pool finishes.
i. HVAC enclosures, cabinets, or covers.

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 23 and 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. Elevators: Remove as whole units as much as practical.

M. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.

N. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

O. Carpet and Pad: Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, and tack strips.

P. 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.

Q. 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.

R. 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 1 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

ROUGH CARPENTRY

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:

1. Framing with dimension lumber.
2. Wood sleepers.
3. Plywood backing panels.

B. Related Requirements:

1. Section 061063 "Exterior Rough Carpentry."
2. Section 061600 "Sheathing" for sheathing, subflooring, and underlayment.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) size or greater but less than 5 inches nominal (114 mm actual) size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

D. OSB: Oriented strand board.

E. Timber: Lumber of 5 inches nominal (114 mm actual) size or greater in least dimension.

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 D5664.
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.

B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Power-driven fasteners.
5. Post-installed anchors.
6. Metal framing anchors.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, [**mark grade stamp on end or back of each piece**] [**or**] [**omit grade stamp and provide certificates of grade compliance issued by grading agency**].
3. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: [**15 percent**] [**19 percent**] [**15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness**] [**15 percent for 2-inch nominal (38-mm actual) thickness or less; no limit for more than 2-inch nominal (38-mm actual) thickness**] [**19 percent for 2-inch nominal (38-mm actual) thickness or less; no limit for more than 2-inch nominal (38-mm actual) thickness**] unless otherwise indicated.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2[**for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground**].

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.[**Do not use inorganic boron (SBX) for sill plates.**]
2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, [**mark end or back of each piece**] [**or**] [**omit marking and provide certificates of treatment compliance issued by inspection agency**].

D. Application: Treat [**all rough carpentry unless otherwise indicated.**] [**items indicated on Drawings, 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.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Treatment shall not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664 and design value adjustment factors shall be calculated according to ASTM D6841

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not bleed through, contain colorants, or otherwise adversely affect finishes.

F. Application: Treat **items indicated on Drawings, and the following:**

1. Framing for raised platforms.
2. Framing for stages.
3. Concealed blocking.

2.4 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: **Construction or No. 2** grade.

1. Application:**Interior partitions not indicated as load bearing**.
2. Species:

a. Hem-fir (north); NLGA.
b. Southern pine or mixed southern pine; SPIB.
c. Spruce-pine-fir; NLGA.
d. Hem-fir; WCLIB, or WWPA.
e. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
f. Northern species; NLGA.
g. Eastern softwoods; NeLMA.
h. Western woods; WCLIB or WWPA.

B. Load-Bearing Partitions: **Construction or No. 2** grade.

1. Application: **interior load-bearing partitions**.
2. Species:

a. Hem-fir (north); NLGA.
b. Southern pine; SPIB.
c. Douglas fir-larch; WCLIB or WWPA.
d. Southern pine or mixed southern pine; SPIB.
e. Spruce-pine-fir; NLGA.
f. Douglas fir-south; WWPA.
g. Hem-fir; WCLIB or WWPA.
h. Douglas fir-larch (north); NLGA.
i. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.
5. Furring.
6. Grounds.
7. Utility shelving.

B. Dimension Lumber Items: **Construction or No. 2** grade lumber of **any of the following species:**

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Western woods; WCLIB or WWPA.
7. Northern species; NLGA.
8. Eastern softwoods; NeLMA.

C. Concealed Boards: [**15**] [**19**] percent maximum moisture content and [**any of**]the following species and grades:

1. Mixed southern pine or southern pine; No. [**2**] [**3**] grade; SPIB.
2. Hem-fir or hem-fir (north); **Construction or No. 2 Common** grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or spruce-pine-fir; **Construction or No. 2 Common** grade; NeLMA, NLGA, WCLIB, or WWPA.
4. Eastern softwoods; No. [**2**] [**3**] Common grade; NeLMA.
5. Northern species; No. [**2**] [**3**] Common grade; NLGA.
6. Western woods; **Construction or No. 2 Common** grade; WCLIB or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 PLYWOOD PANELS

A. Exposed plywood panels to be painted: Plywood, DOC PS 1, Interior A-C in thickness indicated

2.7 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners **with hot-dip zinc coating complying with ASTM A153/A153M**.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

2.8 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.

B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

C. Adhesives for Gluing **Sleepers** to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.

D. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, [**grounds,**]and similar supports to comply with requirements for attaching other construction.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. **Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.**

E. Install shear wall panels to comply with manufacturer's written instructions.

F. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

G. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

H. Do not splice structural members between supports unless otherwise indicated.

I. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

J. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.

K. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

L. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

M. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

N. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

O. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

P. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

1. Comply with **approved** fastener patterns where applicable.
2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for[**screeding or**] attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF WALL AND PARTITION FRAMING

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions[**and for load-bearing partitions where framing members bearing on partition are located directly over studs**]. Fasten plates to supporting construction unless otherwise indicated.
1. For interior partitions and walls, provide **2-by-4-inch nominal- (38-by-89-mm actual-)** size wood studs spaced **16 inches (406 mm)** o.c. unless otherwise indicated.
2. Provide continuous horizontal blocking at midheight of partitions more than 96 inches (2438 mm) high, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs[**, except that two studs may be used for interior non-load-bearing partitions**].

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.

1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches (1200 mm) and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches (1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1800 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.
2. For load-bearing walls, provide double-jamb studs for openings 60 inches (1500 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated[**or, if not indicated, according to Table R502.5(1) or Table R502.5(2), as applicable, in ICC's International Residential Code for One- and Two-Family Dwellings**].

3.4 INSTALLATION OF STAIR FRAMING

A. Provide stair framing members of size, space, and configuration indicated or, if not indicated, to comply with the following requirements:

1. Size: 2-by-12-inch nominal (38-by-286-mm actual) size, minimum.
2. Material: **solid lumber**.
3. Notching: Notch rough carriages to receive treads, risers, and supports; leave at least 3-1/2 inches (89 mm) of effective depth.
4. Spacing: At least three framing members for each 36-inch (914-mm) clear width of stair.

B. Provide stair framing with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

3.5 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes **wet enough that moisture content exceeds that specified**, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

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 1 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. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.
2. Laboratory Test Reports for Credit IEQ 4: For sealants and sealant primers used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. 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.

D. 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.

E. 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 “Spectrem 2” or General Electric “Silglaze”, in a standard color designated by the Architect.

D. CONSTRUCTION SEALANT shall be Tremco “Spectrem 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: Five 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.

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 SL301 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. Bottom brush SL301

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.

C. Color Anodic Finish: AAMA 611-98, AA-M12-C22-A44, Class 1.

1. Color: Dark bronze

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 1 Specification sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Exterior storefront framing.

2. Storefront framing for window walls.

3. Exterior manual-swing entrance door-frame units.

B. Related Sections:

1. Division 08 Section "FRP Doors" for requirements for FRP entrance doors installed in aluminum entrance and storefront framing.

2. Division 08 Section “Glazing” for glass and glazing included as part of the aluminum entrance and storefront systems.

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.

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 the following products (refer to drawings for locations of each framing system):

1. Basis-of-Design 2” x 4-1/2” Thermal Storefront Framing: EFCO Corporation, Series 403.

2. Basis-of-Design 2” x 6-1/2” Thermal Storefront Framing: EFCO Corporation, Series 406T

B. Equivalent Manufacturers: Subject to compliance with requirements provide equivalent products of one of the following manufacturers: (Variations in specified and detailed Basis-of-Design framing dimensions are not acceptable.)

1. Kawneer Co.

2. Tubelite Division of Indal Inc.

3. Vistawall Architectural Products.

4. YKK AP America, Inc.

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.

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-8 for requirements for hardware items other than those indicated to be provided by the aluminum entrance manufacturer.

2.5 FABRICATION

A. General: Sizes of door and 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 door and 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 1¼” wide.

4. Frame tubes sections should be closed back, minimum of 1/8” wall thickness.

5. Door skins should be minimum of 1/8” wall thickness.

6. 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.

7. 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. Provide EPDM or vinyl blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.

2. At interior doors and other locations without weatherstripping, provide neoprene silencers on stops to prevent metal-to-metal contact.

3. Provide finger guards of collapsible neoprene or PVC gasketing securely anchored into frame at hinge-jamb of center-pivoted doors.

2.6 FINISHES:

A. Color Anodic Finish: AAMA 611-98, AA-M12-C22-A44, Class 1.

1. Color: Dark bronze

2.7 GLAZING:

A. Glazing: Comply with requirements indicted in Division 08 Section "Glazing".

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 7 for sealant, fillers, and gaskets.

E. Refer to Division 8 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.

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

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes furnishing, installation and commissioning of door hardware for doors specified in "Hardware Sets" and required by actual conditions: including screws, bolts, expansion shields, electrified door hardware, and other devices for proper application of hardware.

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

C. Related Divisions:
1. Division 07 Joint Sealants
2. Division 26 Electrical

1.02 REFERENCES

A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI):
1. ANSI/BHMA A156.1 Butts & Hinges (2016)
2. ANSI/BHMA A156.3 Exit Devices (2014)
3. ANSI/BHMA A156.4 Door Controls – Closers (2013)
4. ANSI/BHMA A156.6 Architectural Door Trim (2015)
5. ANSI/BHMA A156.7 Template Hinge Dimensions (2016)
6. ANSI/BHMA A156.8 Door Controls – Overhead Stops and Holders (2015)
7. ANSI/BHMA A156.13 Mortise Locks & Latches (2012)
8. ANSI/BHMA A156.16 Auxiliary Hardware (2013)
9. ANSI/BHMA A156.17 Self-Closing Hinges & Pivots (2014)
10. ANSI/BHMA A156.18 Materials & Finishes (2016)
11. ANSI/BHMA A156.21 Thresholds (2014)
12. ANSI/BHMA A156.22 Door Gasketing Systems (2012)
13. ANSI/BHMA A156.25 Electrified Locks (2013)
14. ANSI/BHMA A156.26 Continuous Hinges (2012)
15. ANSI/BHMA A156.28 Keying Systems (2013)

B. International Code Council/American National Standards Institute (ICC/ANSI)/ADA:
1. ICC/ANSI A117.1 Standards for Accessible and Usable Buildings and Facilities 2006

C. Underwriters Laboratories, Inc. (UL):
1. UL 10C Positive Pressure Fire Test of Door Assemblies.
2. UL 1784 Air Leakage Test of Door Assemblies.
3. UL 294 Access Control System Units

D. Door and Hardware Institute (DHI):
1. DHI Publications – Keying Systems and Nomenclature (1989).
2. DHI Publication – Abbreviations and Symbols.
3. DHI Publication – Installation Guide for Doors and Hardware.
4. DHI Publication – Sequence and Format of Hardware Schedule (1996).

E. National Fire Protection Agency (NFPA):
1. NFPA 70 National Electrical Code 2008
2. NFPA 80 Standard for Fire Doors and Other Opening Protectives 2007
3. NFPA 101 Life Safety Code 2006
4. NFPA 105 Standard for the Installation of Smoke Door Assemblies 2007

1.03 SUBMITTALS

A. Submit in accordance with Conditions of the Contract and Division 1 Administrative Requirements and Submittal Procedures Section.

B. Shop Drawings:
1. Organize hardware schedule in vertical format as illustrated in DHI Publications Sequence and Formatting for the Hardware Schedule. Include abbreviations and symbols page according to DHI Publications Abbreviations and Symbols. Complete nomenclature of items required for each door opening as indicated.
2. Coordinate final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of hardware.
3. Architectural Hardware Consultant (AHC), as certified by DHI, who will affix seal attesting to completeness and correctness, including the review of the hardware schedule prior to submittal.

C. Submit manufacturer's catalog sheet on design, grade, and function of items listed in hardware schedule. Identify specific hardware item per sheet, provide an index, and cover sheet.

D. Templates:
1. Upon final approval of the architectural hardware schedules, submit one set of complete templates for each hardware item to the door manufacturers, frame manufacturers, and the installers. Date and index these 8-1/2 inch x 11 inch papers in a three ring binder, including detailed lists of the hardware location requirements for mortised and surface applied hardware within fourteen days of receiving approved door hardware submittals.

E. Electrified Hardware: Provide electrical information to include voltage and amperage requirements for electrified door hardware and description of operation.
1. Description of operation for each electrified opening to include description of component functions including location, sequence of operation and interface with other building control systems.
2. Wiring Diagrams: Detail wiring for power, signal, and control system and differentiate between manufacturers installed and field-installed wiring. Include the following:
    a. System schematic.
    b. Point to point wiring diagram.
    c. Riser diagram.
    d. Elevation of each door.
3. Detail interface between electrified door hardware and fire alarm, access control, security, and building control systems.
4. Provide junction boxes, relays and terminal blocks as needed for proper door operations and connections.

F. Upon door hardware submittal approval, furnish for each electrified opening, three copies of point to point diagrams.

G. Closeout Submittals: Submit to Owner in a three-ring binder or CD if requested.
1. Warranties.
2. Maintenance and operating manual.
3. Maintenance service agreement.
4. Record documents.
5. Copy of approved hardware schedule.
6. Copy of approved keying schedule with bitting list.
7. Door hardware supplier name, phone number, and fax number.

1.04 QUALITY ASSURANCE

A. Listed and Labeled electrified door hardware as defined in NFPA 70, Article 100, by a testing agency acceptable to authority having jurisdiction.

B. Hardware supplier will employ an Architectural Hardware Consultant (AHC) as certified by DHI and a member of the seal program who will be available at reasonable times during course of work for Project hardware consultation.

C. Door hardware conforming to ICC/ANSI A117.1: Handles pulls, latches locks and operating devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.

D. Fired Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and/or labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C, unless otherwise indicated.

E. Fire Door Inspection: Prior to receiving certificate of occupancy have fire rated doors inspected by an independent Certified Fire and Egress Door Assembly Inspector (FDAI), as certified by Intertek (ITS), a written report be submitted to Owner and Contractor. Doors failing inspection must be adjusted, replaced or modified to be within appropriate code requirements.

F. Smoke and Draft Control Door Assemblies: Where smoke and draft control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

G. Door hardware certified to ANSI/BHMA standards as noted, participate and be listed in BHMA Certified Products Directory.

H. Substitution request: create a comparison chart that includes the testing information as well as the warranty for both the specified product and the proposed substitution. Include the reason for requesting the substitution, clear catalog copy highlighting the proposed product and options, compliance statement, technical data, product warranty and lead time, to show how the proposed can meet or exceed established level of design, function, and quality. Approval of request is at the

discretion of the owner, architect, and their designated consultants and will be addressed via addendum prior to bid date.

I. Meetings: Comply with requirements in Division 1 Section "Project Meetings."
   1. Keying Meeting
      a. Within fourteen days of receipt of approved door hardware submittals, contact Owner with representative from hardware supplier to establish a keying conference. Verify keyway, visual key identification, number of master keys and keys per lock. Provide keying system per Owner's instructions.

J. Installer Qualifications: Specialized in performing installation of this Section and have five years minimum documented experience.

K. Hardware listed in 3.07 – Hardware Schedule is intended to establish minimum level of design, type, function and grade of hardware to be used.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide clean, dry and secure room for hardware delivered to Project but not yet installed. Shelve hardware off of the floor and with larger items of hardware being stored on wooden pallets. Arrange locksets and keyed cylinders by opening number. Organize the balance of hardware by brand, model of hardware, and hardware set number. Leave the door markings of the hardware visible for installers.

B. Furnish hardware that is not bulk packed with each unit marked and numbered in accordance with approved finish hardware schedule. Include architect's opening number, hardware set number, and item number for each type of hardware. Include keyset symbols and corresponding hardware component for keyed products.

C. Pack each item complete with necessary parts and fasteners in manufacturer's original packaging.

D. Deliver architectural hardware to the job site according to the phasing agreed upon in the pre-installation meeting. Inventory the delivery with the supplier's assistance. Immediately note shortages and damages on the shipping receipts and bill of ladings. Coordinate replacement or repair with the supplier.

E. Deliver permanent keys, cores and related accessories directly to Owner via registered mail or overnight package service. Establish the instructions for delivery to Owner at "Keying Conference."

F. Waste Management and Disposal: Separate waste materials for use or recycling in accordance with Division 1.

1.06 WARRANTY

A. General Warranty: Owner may have under provisions of the Contract Documents and be an addition and run concurrently with other warranties made by Contractor under requirements of the Contract documents.

B. Special Warranty: Warranties specified in this article will not deprive Owner of other rights.
   1. Ten years for manual door closers.

2. Five years for mortise, auxiliary and bored locks.
3. Five years for exit devices.
4. One year for electromechanical door hardware.

C. Replace or repair defective products during warranty period in accordance with manufacturer's warranty at no cost to Owner. There is no warranty against defects due to improper installation, abuse, and failure to exercise normal maintenance.

D. Maintenance Tool and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal and replacement of door hardware.

PART 2 – PRODUCTS

2.01 CONTINUOUS HINGES

A. Continuous hinges of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Products to be certified and listed by ANSI/BHMA A156.26 Grade 1.

C. Continuous Geared Hinges:
1. Determine model number by door and frame application, door thickness, frequency of use, and fire rating requirements according to manufacturer's recommendations.
   a. Size length of hinge to equal the actual door height unless otherwise stated in hardware sets.

D. Material and Design:
1. Base material: Anodized aluminum manufactured from 6063-T6 material, unexposed working metal surfaces be coated with TFE dry lubricant.
2. Bearings:
   a. Vertical loads be carried on Lubriloy RL bearings for non-fire rated doors.
   b. Continuous hinges are to have a minimum spacing between bearings of 2-9/16". Typical door from 80" to 84" in height to have a minimum of 32 bearings.
3. Options:
   a. Provide Removable Electric Through-Wire (RETW) with appropriate number of wires to transfer power through door frame to door for proper connection of finish hardware. Provide RETW in a form that can be removed for connection, servicing without removing entire hinge from door and frame, and certified to handle an amperage rating of 3.5AMPS/continuous duty with 16.0AMPS/intermittent duty.
   b. Hinges to have Rounded Back Cover Channel (RBCC).
   c. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
   d. At fire rated openings provide hinges that carry a UL certification, up to and including 90-minute applications for wood doors and up to 3-hour applications for metal doors.

E. Acceptable Manufacturers:

Select	SL-11HD

2.02 EXIT DEVICES

A. Exit Devices of one manufacturer as listed for continuity of design and consideration of warranty. Touchpad type, finish to match balance of door hardware.

B. Standards: Manufacturer to be certified and/or listed by the following:
1. BHMA Certified ANSI A156.3 Grade 1.
2. UL/cUL Listed for up to 3 hours for "A" labeled doors.
3. UL10C/UBC 7-2 Positive Pressure Rated.
4. UL10B Neutral Pressure Rated.
5. UL 305 Listed for Panic Hardware.
6. 2007 Florida Building Code Certification Number: FL9481.1.
7. ANSI/BHMA A250.13 Severe Windstorm Resistant Component.

C. Material and Design:
1. Provide exit devices with actuators that extend a minimum of one-half of door width.
2. Where trim is indicated in hardware sets provide the lever design to match design of lock levers.
3. Exit device to mount flush with door.
4. Latchbolts:
   a. Rim device – 3/4" throw, Pullman type with automatic dead-latching, stainless steel
   b. Surface vertical rod device – Top 1/2" throw, Pullman type with automatic dead-latching, stainless steel. Bottom 1/2" throw, Pullman type, held retracted during door swing, stainless steel.
5. Fasteners: Wood screws, machine screws, and thru-bolts.

D. Lock and Latch Functions: Function numbers and descriptions of manufacturer's series and lever styles indicated in door hardware sets.

E. Electric Modifications:
1. Electrired Trim: Outside trim locked (EL) or unlocked (EU) by electric current.

F. Acceptable Manufactures:

Hager	4500 Series	
Von Duprin	98/99 Series	

2.03 CYLINDERS AND KEYING

A. Cylinders of one manufacturer as listed for continuity of design and consideration of warranty.

B. Products to be certified and listed by the following:
1. Auxiliary Locks: ANSI/BHMA A156.5

2. DHI Handbook “Keying systems and nomenclature” (1989)

C. Cylinders:
1. Manufacturer’s standard tumbler type, PERMANENT CORES TO MATCH EXISTING AS DIRECTED BY ARCHITECT/OWNER.
2. Furnish with cams/tailpieces as required for locking device that is being furnished for project.

D. Keying:
1. Copy of Owners approved keying schedule submitted to Owner and Architect with documentation of which keying conference was held and Owner’s sign-off.
2. Provide a bitting list to Owner of combinations as established, and expand to twenty-five percent for future use or as directed by Owner.
3. Keys to be shipped to Owner’s Representative, individually tag per keying conference.
4. Provide visual key control identification on keys.
5. Provide interchangeable cores with 50 construction keys as required per the keying meeting.

E. Acceptable Manufacturers:

BY OWNER

2.04 CLOSERS

A. Closers of one manufacturer as listed for continuity of design and consideration of warranty, unless otherwise indicated on hardware schedule, comply with manufacturer’s recommendations for size of closer, depending on width of door, frequency of use, atmospheric pressure, ADAAG requirement, and fire rating.

B. Standards: Manufacturer to be certified and or listed by the following:
1. BHMA Certified ANSI A156.4 Grade 1.
2. ADA Complaint ANSI A117.1.
3. UL/cUL Listed up to 3 hours.
4. UL10C Positive Pressure Rated.
5. UL10B Neutral Pressure Rated.

C. Material and Design:
1. Provide cast iron non-handed bodies with full plastic covers.
2. Closers will have separated staked adjustable valve screws for latch speed, sweep speed, and backcheck.
3. Provide Tri-Pack arms and brackets for regular arm, top jamb, and parallel arm mounting.
4. One-piece seamless steel spring tube sealed in hydraulic fluid.
5. Double heat-treated steel tempered springs.
6. Precision-machined heat-treated steel piston.
7. Triple heat-treated steel spindle.
8. Full rack and pinion operation.

D. Mounting:

1. Out-swing doors use surface parallel arm mount closers except where noted on hardware schedule.
2. In-swing doors use surface regular arm mount closers except where noted on hardware schedule.
3. Provide brackets and shoe supports for aluminum doors and frames to mount fifth screw.
4. Furnish drop plates where top rail conditions on door do not allow for mounting of closer and where backside of closer is exposed through glass.

E. Size closers in compliance with requirements for accessibility (ADAAG). Comply with following maximum opening force requirements.
1. Interior hinged openings: 5.0 lbs.
2. Fire-rated and exterior openings use minimum opening force allowable by authority having jurisdiction.

F. Fasteners: Provide self-reaming, self-tapping wood and machine screws, and sex nuts and bolts for each closer.

G. Acceptable manufacturers:

Hager	5100 Series
LCN	4040XP
Burns	

2.05 THRESHOLDS

A. Thresholds of one manufacturer as listed for continuity of design and consideration of warranty.

B. Set thresholds for exterior and acoustical openings in full bed of sealant with lead expansion shields and stainless steel machine screws complying with requirements specified in Division 7 Section “Joint Sealants: Notched in field to fit frame by hardware installer. Refer to Drawings for special details.

C. Standards: Manufacturer to be certified by the following:
1. Thresholds: ANSI/BHMA A156.21.
2. American with Disabilities Act Accessibility Guidelines (ADAAG).

D. Acceptable Manufacturers:

Hager	415S
K.N. Crowder	
Reese	

2.06 DOOR GASKETING AND WEATHERSTRIP

A. Door gasketing and weatherstrip of one manufacturer as listed for continuity of design and consideration of warranty.

B. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing where indicated on hardware schedule. Provide noncorrosive fasteners for exterior applications.
   1. Perimeter gasketing: Apply to head and jamb, forming seal between door and frame.
   2. Meeting stile gasketing: Fasten to meeting stiles, forming seal when doors are in closed position.
   3. Door buttons: Apply to bottom of door, forming seal with threshold or floor when door is in closed position.
   4. Sound Gasketing: Cutting or notching for stop mounted hardware not permitted.
   5. Drip Guard: Apply to exterior face of frame header. Lip length to extend 4" beyond width of door.

C. Products to be certified and listed by the following:
   1. Door Gasketing and Edge Seal Systems: ANSI/BHMA A156.22.
   2. BHMA certified for door sweeps, automatic door bottoms, and adhesive applied gasketing.

D. Smoke-Labeled Gasketing: Comply with NFPA 105 listed, labeled, and acceptable to Authorities Having Jurisdiction, for smoke control indicated.
   1. Provide smoke-labeled gasketing on 20 minute rated doors and on smoke rated doors.

E. Fire-Rated Gasketing: Comply with NFPA 80 listed, labeled, and acceptable to Authorities Having Jurisdiction, for fire ratings indicated.

F. Refer to Section 08 1416 Wood Doors for Category A or Category B. Comply with UBC 7-2 and UL10C positive pressure where frame applied intumescent seals are required.

G. Acceptable Manufacturers:

1. Perimeter Gasketing:

By frame manufacturer		

2. Door Bottom Sweeps:

Special-Lite	SL-301

3. Overhead Drip Guard

Hager	810S
K.N. Crowder	
Reese	

2.07 FINISHES

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if within range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved samples.

B. Comply with base material and finish requirements indicated by ANSI/BHMA A156.18 designations in hardware schedule.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine doors and frames, with Installers present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

Hardware Sets

SET #1

Doors:

Hamilton B102, B103, B104, B112, B113, B114, B115, B116, B117, C102, C105, C108, C111, C114, C117, C128, C131, C134

Wass A137, A141, A145, B102, B103, B104, B112, B113, B114, B115, B116, B117, C102, C105, C108, C111, C114, C117, C128, C131, C134

1	Continuous Hinge	SL-11 HD	DKBRZ	SEL
1	Exit Device	4501 RIM	US26D	HA
1	Rim Cylinder Housing	3901 SFIC	US26D	HA
1	IC Core	IC CORE (BY OTHERS)	US26D	BYOT
1	Door Pull	SL-86	BKBRZ	SPCL
1	Closer	5100 HDCS	ALM	HA
1	Door Bottom	SL-301 X LAR	MIL	SPCL
1	Gasketing	PERIMETER GASKETS BY FRAME MANUFACTURER/SUPPLIER		BYOT
1	Threshold	415S X LAR with sure-step non slip	MIL	HA

GLAZING

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. 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. Glazed entrances.
5. 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
f. Visteon Corp.

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 Solarban 60 SOLARGRAY as manufactured by PPG Industries, Inc. or equal by one of the above listed primary glass manufacturers

2. Color: Gray

3. Comply with the following properties for one-inch insulating glass with Low-E Coating:

a. Visible Light Transmittance: 35%
b. Summer U-Value: 0.27
c. Winter U-Value: 0.29
d. Solar Heat Gain Coefficient: 0.25
e. Shading Coefficient: 0.29

D. 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.

E. 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 third surface of tinted insulating unit or second surface of clear insulating unit. See glass schedule for types and thicknesses.

1. Pyrolytic-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide coating applied by pyrolytic deposition process during initial manufacture, and complying with other requirements specified.

2. 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 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.

2.4 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.

2.5 GLAZING SEALANTS

A. Sealant for Glazing: Meet requirements for materials and workmanship specified under Division 7 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.

2.6 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.

2.7 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.

2.8 GLASS SCHEDULE

A. Schedule of Glass Types:

GL-11 Tempered Insulating Glass consisting of:
Exterior Lite: 1/4”
Tint: Gray
Airspace: 1/2”
Interior Lite: 1/4”
Tint: Clear
Low-E Coating: #3 Surface.

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

LOUVERS AND VENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. Extent of louvers and vents is indicated on drawings, including indications of sizes and locations.

B. Types of louvers and vents include the following:

1. Extruded aluminum louvers

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 7 Section “Joint Sealants” for sealants.

2. Division 15 for air-handling louvers connected to ductwork.

1.3 QUALITY ASSURANCE:

A. Comply with SMACNA "Architectural Sheet Metal Manual" recommendations for fabrication, construction details and installation procedures, except as otherwise indicated.

B. Field measurements: Verify size, location and placement of louver units prior to fabrication, wherever possible.

C. Shop Assembly: Coordinate field measurements and shop drawings with fabrication and shop assembly to minimize field adjustments, splicing, mechanical joints and field assembly of units. Pre-assemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

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 specifications; certified test data, where applicable; and installation instructions for required products, including finishes.

C. Samples: Submit pairs of samples of each type and color of aluminum finish, on 12" long sections of extrusions or formed shapes or 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.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. Manufacturer: Subject to compliance with requirements, provide products equal to Ruskin Manufacturing Co. No. ELF 211D drainable blade louver.

1. The Airolite Co.

2. American Warming and Ventilating Co.

3. Construction Specialties, Inc.

2.2 MATERIALS:

A. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer to provide required finish.

B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T52.

C. Fastenings: Use same material as items fastened, unless otherwise indicated. Fasteners for exterior applications may be hot-dip galvanized, stainless steel or aluminum. Provide types, gages and lengths to suit unit installation conditions. Use Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.

D. Anchors and Inserts: Use non-ferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

E. Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).

2.3 FABRICATION, GENERAL:

A. Provide louvers and accessories of design, materials, sizes, depth, arrangement, and metal thicknesses indicated, or if not indicated, as required for optimum performance with respect to airflow; water penetration; air leakage, where applicable (for adjustable units, if any); strength; durability; and uniform appearance.

B. Fabricate frames including integral sills to suit adjacent construction with tolerances for installation, including application of sealants in joints between louvers and adjoining work.

C. Include supports, anchorages, and accessories required for complete assembly.

D. Join frame members to one another and to stationary louver blades by welding, except where indicated otherwise or where field bolted connections between frame members are made necessary by size of louvers. Maintain equal blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

2.4 STATIONARY EXTRUDED ALUMINUM WALL LOUVERS:

A. Horizontal Blade Louvers: Size and depth indicated, with blades of profile, slope and spacing indicated, or if not indicated, to meet performance requirements.

1. Frame Depth: 2”

2. Extrusion Thickness: Not less than 0.060" for blades and frames.

3. Continuous Horizontal Blades: Conceal supporting framework from vision on outside face of louver by placing braces, mullions and brackets on inside face; with close fitting, field-made splice joints in blades designed to permit expansion and contraction without deforming blades or framework.

    a. Exterior Corners: Shop miter and weld blades into prefabricated corner units to align with straight sections. Include concealed bracing.
    b. Aluminum: Not less than 14 gage.

4. Provide glazing frame where indicated on drawings for louver to be glazed into storefront framing

2.5 LOUVER GRILLES

A. General: Provide louvers with grilles at locations indicated.

1. Grille Location for Fixed Louvers: Exterior face.

2. Grille Type: Perforated metal panel
    a. Material: ASTM B209, Alloy 6063, Temper T-6 Aluminum.
    b. Thickness: 0.064”
    c. Perforations: 1” square perforations placed in straight line pattern, 1.5” on center
    d. Finish: Dark bronze anodized

B. Secure grille to louver frames with stainless steel machine screws, spaced at each corner and at 12 inch o.c. between.

2.6 LOUVER SCREENS

A. General: Provide louvers with screens at locations indicated.

1. Screen Location for Fixed Louvers: Interior face, unless otherwise indicated.

2. Screening Type: Bird screening, unless otherwise indicated.

B. Secure screens to louver frames with stainless steel machine screws, spaced at each corner and at 12 inch o.c. between.

C. Louver Screen Frames: Fabricate screen frames with mitered corners to louver sizes indicated and to comply with the following requirements:

1. Metal: Same kind and form of metal as indicated for louver frames to which screens are attached.

    a. Reinforce extruded aluminum screen frames at corners with clips.
    b. Finish: Same finish as louver frames to which louver screens are attached.
    c. Type: Non-rewireable U-shaped frames for permanently securing screen mesh.

D. Louver Screening for Aluminum Louvers: Fit aluminum louver screen frames with screening covering louver openings and complying with the following requirements:

1. Bird Screening: 1/2 inch square mesh formed with 0.063 inch diameter aluminum wire.

2.7 BLANK-OFF PANELS

A. General: Fabricate blank-off panels from materials and to sizes indicated and to comply with the following requirements:

1. Finish: Match finish applied to louver with respect to coating type, except for color which shall be as follows:

a. Black.

2. Attach blank-off panels to back of louver frames with stainless steel sheet metal screws.

B. Insulated Blank-Off Panels: Laminated metal-faced panels consisting of insulating core surfaced on back and front with metal sheets; complying with the following requirements:

1. Thickness: 2 inch.

2. Metal Facing Sheets: Aluminum sheet, 0.032 inch thick.

3. Insulating Core: Extruded polystyrene insulation board insulation complying with ASTM C 578, Type VII (2.2 lb/cu. ft. density).

4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded aluminum channel frames 0.081 inch thick, with corners mitered and with same finish as panels.

5. Seal perimeter joints between panel faces and louver frames with polyvinyl chloride compression gaskets, 1/8 inch by 1 inch.

2.8 METAL FINISHES:

A. GENERAL: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. Apply finishes in factory after products are assembled. Protect finishes on exposed surfaces with protective covering, prior to shipment. Remove scratches and blemishes from exposed surfaces which will be visible after completing finishing process.

1. Provide custom color as selected by Architect.

B. Aluminum Finishes:

1. Class I Color Anodized.
   a. Comply with Aluminum Association AA-C21A44.
   b. Apply finish following chemical etching and pretreatment.
   c. Minimum Thickness: 0.7 mils (0.018 mm), 60 minute anodizing process.
   e. Class I Color Anodized: Dark Bronze.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Coordinate setting drawings, diagrams, templates, instructions and directions for installation of anchorages which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.2 INSTALLATION:

A. Locate and place louver units plumb, level and in proper alignment with adjacent work.

B. Use concealed anchorages wherever possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Repair finishes damaged by cutting, welding, soldering and grinding operations required for fitting and jointing. Restore finishes so there is no evidence of corrective work. Return items which cannot be refinished in field to shop, make required alterations, and refinish entire unit, or provide new units, at Contractor's option.

D. Protect galvanized and non-ferrous metal surfaces from corrosion or galvanic action by application of a heavy coating of bituminous paint on surfaces which will be in contact with concrete, masonry or dissimilar metals.

E. Refer to Division-7 sections for sealants in connection with installations of louvers.

END OF SECTION

ROLLER SHADES

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 manual roller shades.

B. Related Sections include the following:

1. Division 06 Section “Rough Carpentry” for wood blocking and grounds.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions.

B. Shop Drawings: Show location and extent of roller shades. Include elevations, sections, details, and dimensions not shown in Product Data. Show installation details, mountings, attachments to other Work, operational clearances, and relationship to adjoining work.

C. Full size sample for verification purposes of each type of window shade showing all components, materials, and finishes to be exposed to view. Prepare samples from same materials to be used for fabricating units.

D. Samples for Verification:

1. Complete, full-size operating unit not less than 16 inches (400 mm) wide for each type of roller shade indicated.

2. Shade Material: Not less than 3 inches (80 mm) square, with specified treatments applied. Mark face of material.

3. Valance: Full-size unit, not less than 12 inches (300 mm) long.

E. Window Treatment Schedule: Include roller shades in schedule using same room designations indicated on Drawings.

F. Product Certificates: For each type of roller shade product, signed by product manufacturer.

G. Product Test Reports: For each type of roller shade product.

H. Qualification Data: For Installer.

I. Maintenance Data: For roller shades to include in maintenance manuals. Include the following:

1. Methods for maintaining roller shades and finishes.

2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.

3. Operating hardware.

J. Warranty: Furnish a twenty five year (25) guarantee against defects in material and workmanship from the date of substantial completion.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed installation of roller shades 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.

1. Provide a list of three institutional-quality window shade projects successfully completed within the last five years. For each project include the following:

a. Project/building name and location.
b. Description of scope.
c. Representative's name and phone number.

B. Source Limitations: Obtain roller shades through one source from a single manufacturer.

C. Corded Window Covering Product Standard: Provide roller shades complying with WCMA A 100.1.

D. Mockups: Build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.

1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.

2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory packages, marked with manufacturer and product name, and location of installation using same room designations indicated on Drawings and in a window treatment schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and wet and dirty finish work in spaces, including painting, is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide MechoShades as manufactured by MechoShade Systems, Inc or equal products by one of the following:

1. Draper Shade and Screen Co., Inc.

2. Solarfective Products, Ltd.

B. Refer to roller shade schedule in Part 3.

2.2 ROLLER SHADES

A. Shade Band Material - Translucent

1. Translucent Shades shall be light filtering, flame retardant, fade and soil resistant and washable.

a. Construction: 100% thermoplastic olefin
b. Openness Factor: 3 percent.
c. Meets Government Spec. #CCC-C-521-E.
d. Type I product
e. Weight: Must be a minimum of 6.4 oz. per square yard.
f. Color: As selected by Architect from manufacturer's full range.
1) Design Intent: Grey and white.

2. Provide EcoVeil 1550 Series ShadeCloth as manufactured by MechoShade Systems or equal products by one of the following:

a. Draper Shade and Screen Co., Inc.
b. Solarfective Products, Ltd.

B. Rollers: Electrogalvanized or epoxy primed steel or extruded-aluminum tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets; with removable spline fitting integral channel in tube Provide capacity for one roller shade band per roller, unless otherwise indicated on Drawings.

C. Direction of Roll: Regular, from back of roller.

D. Mounting Brackets: Galvanized or zinc-plated steel.

E. Roller Shades, Non-Pocket-Style:

1. Fascia: L-shaped, formed-steel sheet or extruded aluminum; long edges returned or rolled; continuous panel concealing front and bottom of shade roller, brackets, and operating hardware and operators; length as indicated on Drawings or in a window treatment schedule; removable design for access.

2. Top/Back Cover: L shaped; material and finish to match fascia; combining with fascia and end caps to form a six-sided headbox enclosure sized to fit shade roller and operating hardware inside.

F. Bottom Bar: Steel or extruded aluminum, with plastic or metal capped ends. Provide exposed-to-view, external-type bottom bar with concealed weight bar as required for smooth, properly balanced shade operation.

G. Shade Operation:

1. Manual: Provide with spring roller continuous loop bead chain, clutch, and cord tensioner and bracket lift operator.

a. Position of Clutch Operator: Left or Right side of roller, as determined by hand of user facing shade from inside, unless otherwise indicated on Drawings or in a window treatment schedule.
b. Clutch: Capacity to lift size and weight of shade; sized to fit roller or provide adaptor.
c. Lift Assist Mechanism: Manufacturer's standard spring assist for balancing roller shade weight and lifting heavy roller shades.
d. Loop Length: Length required to make operation convenient from floor level.
e. Bead Chain: Nickel-plated metal or stainless steel.
f. Operating Function: Stop and hold shade at any position in ascending or descending travel.

H. Valance: Style matching hem; as indicated by manufacturer's designation color or as indicated in a window treatment schedule.

I. Mounting: As indicated on Drawings, mounting permitting easy removal and replacement without damaging roller shade or adjacent surfaces and finishes.

2.3 ROLLER SHADE FABRICATION

A. Product Description: Roller shade consisting of a roller, a means of supporting the roller, a flexible sheet or band of material carried by the roller, a means of attaching the material to the roller, a bottom bar, and an operating mechanism that lifts and lowers the shade.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.

1. Lifting Mechanism: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Shade Units Installed between (Inside) Jambs: Edge of shade not more than 1/4 inch (6 mm) from face of jamb. Length equal to head to sill dimension of opening in which each shade is installed.

2. Shade Units Installed Outside Jambs: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

D. Installation Brackets: Designed for easy removal and reinstallation of shade, for supporting headbox, roller, and operating hardware and for hardware position and shade mounting method indicated.

E. Installation Fasteners: Not fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

G. Colors of Metal and Plastic Components Exposed to View: As selected by Architect from manufacturer's full range.

2.4 WARRANTY

A. Furnish a twenty five year (25) guarantee against defects in material and workmanship from the date of substantial completion.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow clearances for window operation hardware.

B. Connections: Connect motorized operators to building electrical system.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain systems.

3.6 ROLLER SHADE SCHEDULE

A. Type A Shade Band Material: Translucent
Operation: Manual
Installation: Non-pocket style

END OF SECTION

FIRE ALARM

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.

B. Related Sections include the following:

1. Division 26 Section “Electrical General Requirements.”

1.2 SECTION INCLUDES

A. Fire alarm and smoke detection systems. Removal and reinstallation of existing National Time & Signal pull stations, in full compliance with all applicable codes and guidelines. The features and system capacities contained in this specification shall be furnished as part of this project.

B. The system as described shall be installed, tested, and delivered to the Owner in first class condition. The system shall include all the required hardware and software to accomplish the requirements of this specification and the contract documents, whether or not specifically itemized herein.

C. All equipment furnished shall be new and include the latest state of the art products from a single manufacturer, engaged in the manufacturing and sale of fire detection devices for over ten years. The equipment manufacturer shall have an installed base of existing systems as a reference.

1.3 REFERENCES

A. NFPA 72 - National Fire Alarm Code.

B. NFPA 101 - Life Safety Code.

C. U.L. 1971 - Standard for Safety Signaling Devices for the Hearing Impaired.

1.4 REGULATORY REQUIREMENTS

A. System: UL (FPED) and FM listed.

B. Conform to requirements of NFPA 101.

C. A.D.A. Federal guidelines.

D. Conform to State of Michigan Fire Code.

E. Conform to International Building Code.

1.5 SUMMARY

A. This Section includes **the removal and reinstallation of fire alarm pull stations at Hamilton and Wass Elementary Schools. Work required due to window replacement, pull stations are mounted on window mullions. Extend circuiting as required.**

B. Related Sections include the following:

1. Division 8 Section "Door Hardware" for door closers and holders with associated smoke detectors, electric door locks, and release devices that interface with the fire alarm system.

1.6 SYSTEM DESCRIPTION

A. Noncoded, addressable system; multiplexed signal transmission dedicated to fire alarm service only.

1. Interface with existing fire alarm system where indicated.

B. Fire alarm system shall consist of the following:

1. All new fire alarm control panel, devices, and wiring.

2. System smoke detection above all control panels and notification appliance power supply panels.

3. System smoke detection as required at air handling units, smoke rated transfer openings, and smoke damper locations.

4. System smoke detection in areas identified on plans.

5. All flow and tamper switches to monitor fire sprinkler and standpipe systems and report appropriate alarm and supervisory signals.

6. Manual fire alarm boxes at each building exit (prior to entering exit stairwells at each floor).

7. Audible and visual notification appliances in all public and common areas of the building.

1.7 PERFORMANCE REQUIREMENTS

A. Comply with NFPA 72.

B. Comply with NFPA 70.

C. A complete functional system meeting the requirements of this specification, including alarm initiating devices and notification appliances at locations and ratings to meet the requirements of the Authorities Having Jurisdiction and all applicable codes shall be provided.

D. Coordinate and avoid conflicts with casework, markerboards, feature walls, and other areas where fire alarm devices would interfere with furnishings, finishes, etc.

E. Fire alarm system vendor shall provide sound pressure level calculations demonstrating compliance with NFPA 72 and establish quantities and tap settings of audible devices.

F. No additional charges for work or equipment required for a code compliant system approved by the Authority Having Jurisdiction will be allowed.

G. Obtain and refer to mechanical drawings for smoke damper locations, smoke rated transfer openings, and air handling equipment CFM’s. Provide smoke detection as required by applicable codes.

H. Premises protection includes Education Type building use group**.**

1. Refer to drawings for complete code analysis including construction type, use groups, special occupancy types, rated walls, smoke barriers and partitions, etc.

I. System functional performance shall be as indicated on the fire alarm matrix on the drawings.

1.8 SYSTEM DESCRIPTION

A. General: Complete, zoned, noncoded, addressable, microprocessor-based fire detection and alarm system with manual and automatic alarm initiation, addressable analog initiating devices, and automatic alert.

B. The fire alarm system shall allow for loading and editing special instructions and operating sequences as required. The system shall be capable of on-site programming to accommodate system expansion and facilitate changes in operation. All software operations shall be stored in a non-volatile programmable memory within the fire alarm control panel (FACP).

C. Resident software shall allow for full configuration of initiating circuits so that additional hardware shall not be necessary to accommodate future changes.

D. Resident software shall allow for configuration of notification appliance and control circuits so that additional hardware shall not be necessary to accommodate changes.

E. The system shall have the capability of recalling alarms and trouble conditions in chronological order for the purpose of recreating an event history.

F. Signal Transmission: Notification appliance circuits shall be NFPA Style Y, Class B. Signaling line circuits shall be NFPA Style 4, Class B.

G. Data Communication Transmission Between Control Units: Style 7, Class A.

1.9 SYSTEM FUNCTIONS

A. Signal Initiation: The manual or automatic operation of an alarm-Initiating or supervisory-operating device shall cause the FACP to transmit an appropriate signal including:

1. General alarm.

2. System trouble.

3. Valve tamper supervisory.

4. Door release.

5. Fan shutdown.

6. Release electrically held door locks.

7. A general alarm shall be initiated by:

8. Water-flow alarm switch operation.

9. Smoke detection. Alarm verification is required for all smoke detector zones.

10. Manual station operation.

11. Heat detector operation.

B. General Alarm: A system general alarm shall:

1. Indicate the general alarm condition at the FACP.

2. Identify the device that is the source of the alarm at the FACP.

3. Display the alarm on an 80 character LCD display. The system alarm LED shall flash on the control panel until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on. A subsequent alarm received from another zone shall flash the system alarm LED on the control unit. The display shall show the new alarm information.

4. Sound a pulsing alarm tone within the FACP until the event has been acknowledged.

5. Operate audible and visible alarm notification signals throughout the building.

6. Sound a continuous fire alarm signal until silenced by the alarm silence switch at the FACP.

7. Flash all visible alarm notification appliances continuously until the System Reset Switch is operated. Any subsequent zone alarm shall reactivate the alarm notification appliances.

8. Close fire and smoke doors normally held open by magnetic door holders.

9. Stop supply and return fans serving zone where alarm is initiated.

10. Close smoke dampers on system serving zone where alarm is initiated.

11. Transmit the alarm to the proprietary supervising station.

C. A supervisory alarm shall be initiated by:

1. Sprinkler valve tamper switch operation.

D. Loss of primary power at the FACP shall sound a trouble signal at the FACP and shall indicate at the FACP when the system is operating on an alternate power supply.

E. Circuit Supervision: Circuit faults shall be indicated by means of both a zone and a trouble signal at the FACP.

F. Annunciation: Manual and automatic operation of alarm and supervisory initiating devices shall be annunciated on the FACP, indicating the location and type of device.

G. FACP Alphanumeric Display: Shall display plain-language description of alarms, trouble signals, supervisory signals, monitoring actions, system and component status, and system commands.

H. Independent System Monitoring: Supervise each independent smoke detector, fire suppression system and duct detector, for both normal operation and trouble.

I. Alarm Silencing: If the “Alarm Silence” button is pressed, all audio alarm signals shall cease operation.

J. System Reset: The “System Reset” button shall be used to return the system to its normal state after an alarm condition has been remedied.

K. Activation of an auxiliary bypass switch shall override the selected automatic functions.

L. Auxiliary manual controls shall be supervised so that an "off normal" position of any switch shall cause an "off normal" system trouble. The “off normal” status shall be clearly identified in plain-language on the FACP.

M. Recording of Events: Record all alarm, supervisory, and trouble events in non-volatile memory.

N. Smoke Sensor Sensitivity Adjustment:

1. Authorized operation of controls at the FACP shall cause the selection of specific addressable smoke sensors for adjustment, display of their current status and sensitivity settings, and control of changes in those settings.

2. Remote Controllability: Individually monitor sensors at the FACP for calibration, sensitivity, and alarm condition, and individually adjust for sensitivity from the FACP. The alarm decision for each sensor shall be determined by the control unit. The control unit shall determine the condition of each sensor by comparing the sensor value to the stored values.

O. The actuation of the “enable one person test” program at the FACP shall activate the “One Person Testing” mode of the system which shall cause the following to occur:

1. The city circuit connection shall be bypassed.

2. Control relay functions shall be bypassed.

3. The FACP shall show a trouble condition.

4. The alarm activation of any initiation device shall cause the audible notification appliances to code a number of pulses to match the zone number.

5. The FACP shall automatically reset after signaling is complete.

6. Any momentary opening of an initiating or notification appliance circuit wiring shall cause the audible signals to sound for 4 seconds indicating the trouble condition.

7. The system shall have the capacity of 8 programmable, passcode protected, one person testing groups, such that only a portion of the system need be disabled during testing.

P. Power Requirements

1. The FACP shall receive 120 VAC power via a dedicated 20A branch circuit breaker provided with a red lock-on device.

2. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 VAC power in a normal supervisory mode for a period of 24 hours with 15 minutes of alarm operation at the end of this period. The system shall automatically transfer to battery standby upon power failure. All battery charging and recharging operations shall be automatic.

3. All circuits requiring system operating power shall be 24 VDC and shall be individually fused at the control panel.

4. The incoming power to the system shall be supervised so that any power failure must be audibly and visibly indicated at the control panel. A green "power on" LED shall be displayed continuously while incoming power is present.

5. The system batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visibly indicated at the FACP and the command center.

Q. The system shall support 100% of addressable devices in alarm or operated at the same time, under both primary (AC) and secondary (battery) power conditions.

1.10 SUBMITTALS

A. Bidders will be required to submit shop drawings and product data during the construction phase of each project. Provide the following submittals for review:

1. Complete description data indicating UL listing for all network components. Include dimensioned plans and elevations showing minimum clearances and installed features and devices.

2. Complete sequence of operation of all functions of the network that is project specific.

3. A list of every address of every device connected to a panel that is provided for purposes of alarm initiating, status monitoring, supervised notification appliance circuits, and auxiliary control.

4. A listing of the manufacturer's representatives responsible for installation coordination and service.

5. Location of all controls, alarm actuating devices and notification appliance devices as shown on drawings.

6. Wiring diagrams from manufacturer differentiating between factory-and field- installed wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Indicate components for both field and factory wiring. Provide complete diagrams for all components and interfaces including equipment supplied by others.

7. Operation and maintenance data for inclusion in Operating and Maintenance Manual specified in Division 1. Include data for each type product, including all features and operating sequences, both automatic and manual. Include recommendations for spare parts to be stocked at the site. Provide the names, addresses, and telephone numbers of service organizations that carry stock of repair parts for the system to be furnished.

8. The manufacturer shall provide calculations for battery size as applicable. Battery size shall be a minimum 125% of the calculated requirement.

9. Provide calculations for control modules indicating circuit loading with 20% spare capacity.

B. Submission to Authority Having Jurisdiction: In addition to routine submission of the above material, make an identical submission to the authority having jurisdiction. Include copies of annotated Contract Drawings as required to depict component locations to facilitate review. Upon receipt of comments from the Authority, submit them for review. Make resubmissions if required to make clarifications or revisions to obtain approval. **Note: National Time & Signal (and the electrical contractor) shall include in their pricing submittals to the Bureau of Fire Services and all services, if required.**

1.11 PROJECT RECORD DOCUMENTS

A. Submit as built drawings locating devices and conductor runs.

B. Record of field tests of system.

C. Submit manufacturer's certificate that system meets or exceeds specified requirements.

1.12 OPERATION, MAINTENANCE DATA, AND CALCULATIONS

A. Provide to the Owner’s representative operating instructions, maintenance, and repair procedures.

B. After installation, include manufacturer representative's letter stating that system is operational.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage and handling of products will take place under the contract terms of each project in the construction phase of each project.

1.14 EXTRA MATERIALS

A. Provide spare parts to the Owner’s representative as noted below:

1. Two keys of each type (for each project).

2. Two smoke detectors (for each project).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **National Time & Signal. Expand the existing fire alarm system at Hamilton and Wass Elementary Schools as required to remove and reinstall fire alarm pull stations.**

2.2 FIRE ALARM CONTROL PANEL (FACP).

A. General: Comply with UL 864, "Control Units for Fire-Protective Signaling Systems."

B. Cabinet: Lockable steel enclosure. Arrange unit so all operations required for testing or for normal care and maintenance of the system are performed from the front of the enclosure. If more than a single unit is required to form a complete control unit, provide exactly matching modular unit enclosures. Accommodate all components and allow ample gutter space for interconnection of units as well as field wiring. Identify each enclosure by an engraved, red-laminated, phenolic resin nameplate. Lettering on the enclosure nameplate shall not be less than 1-inch high.

C. Systems: Alarm and supervisory systems are separate and independent in the FACP. The alarm-initiating zone boards in the FACP consist of plug-in modules. Construction requiring removal of field wiring for module replacement is not acceptable.

D. Control Modules: Types and capacities required to perform all functions of the fire alarm systems plus 20% for future expansion. Local visible, and audible signals notify of alarm, supervisory, and trouble conditions

E. Zones: Provide for all alarm and supervisory zones indicated.

F. Resetting: Provide the necessary controls to prevent the resetting of any alarm, supervisory, or trouble signal while the alarm or trouble condition still exists.

G. Alphanumeric Display and System Controls: Arrange to provide the basic interface between human operator at FACP and addressable system components, including annunciation, supervision, and control. A display with a minimum of 80 characters displays alarm, supervisory, and component status messages and indicates control commands to be entered into the system

for control of smoke detector sensitivity and other parameters. Arrange keypad for use in entering and executing control commands.

H. System power supplies including necessary transformers, regulators, filters and surge protection required for system operation.

I. System processor, with internal operating system to process incoming alarm signals and issue output commands required as a result of the alarm signals and issue output. Total system response time shall not exceed 2.5 seconds on a system configured to the 3000 point capacity. All system processors shall be supervised by individual watchdog circuitry furnishing automatic restart after loss of activity. Systems with single watchdog circuits for all processors will not be accepted unless furnished with a standby CPU.

J. A limited energy output circuit for operation of direct current (DC) audible or visual devices, leased line or city tie, shall be provided by a controllable signal module.

K. Where control of operations requiring switching functions is indicated, there shall be provided a software controlled relay module.

1. Motherboards shall be furnished as the system bus furnishing systems communications to the various plug in modules necessary for system operations.

L. Remote Station Signal Transmitter: Electrically supervised, capable of transmitting contact I.D. and point annunciation signals over a communication means (Internet) to remote central station receiver (National Time & Signal). The electrical contractor/National Time & Signal shall coordinate all requirements (cat 6e cabling/connections and UPS for 24 hour back-up, plus other requirements for a complete system). Note: National Time & Signal shall be sub-contracted by the electrical contractor. Include all costs in bid.

2.3 REMOTE FIRE ALARM ANNUNCIATOR PANEL

A. Provide remote annunciation and control using an 80 character, back-lit, alphanumeric, LCD readout. Alarm indication shall be identical to that at the main FACP including tone alert. Provide a minimum of four programmable control switches, alarm silence and system reset.

B. Provide brushed aluminum trim plate.

2.4 EMERGENCY POWER SUPPLY

A. General: Components include battery, charger, and an automatic transfer switch.

B. Battery: Sealed lead-acid or nickel cadmium type. Provide sufficient capacity to operate the complete alarm system in normal or supervisory (non-alarm) mode for a period of 24 hours. Following this period of operation on battery power, the battery shall have sufficient capacity to operate all components of the system, including all alarm indicating devices in alarm of supervisory mode for a period of 15 minutes.

C. Magnetic door holders are not served by emergency battery power. Magnetic door holders are released after 15 seconds when normal power fails.

2.5 SMOKE DETECTORS, INTELLIGENT ADDRESSABLE

A. Furnish and install where indicated on the drawings intelligent analog smoke detectors with features and characteristics as follows:

1. Photoelectric detectors shall be listed for use as open area protective coverage, in duct installation and shall be insensitive to air velocity changes.

a. The control panel shall provide a sensitivity readout for all detectors without removal from the pluggable base. Detectors not listed for sensitivity testing and logging from the control panel are not acceptable.
b. Detectors shall be operational with relay bases (as applicable), audible bases, and remote indicating LED's, programmable by the control panel and controlled by the detector electronics.

B. Provide smoke detectors above fire alarm control panel, remote annunciator panels, and remote notification appliance power supply panels.

C. Provide smoke detectors with auxiliary set of contacts where required.

2.6 THERMAL DETECTOR, INTELLIGENT ADDRESSABLE

A. The intelligent thermal detectors shall be of the rate compensated fixed temperature type and shall be listed by Underwriters Laboratories, Inc. The intelligent thermal detectors shall be individually annunciated on the control panel. The intelligent thermal detectors shall contain an integral alarm lamp.

2.7 DUCT SMOKE DETECTORS

A. The air duct detector shall be listed by Underwriters Laboratories, Inc. The air duct detector shall operate on a cross-sectional air sampling principle to overcome stratification and the skin effect. The air duct detector shall consist of a standard (intelligent/analog) photoelectric detector mounted in an air duct sampling assembly and sampling tube that protrudes across the duct of the ventilating system. The air duct detector shall retain the features of the intelligent/analog photoelectric detector, and be installed in the ventilating duct as indicated in the manufacturer's instructions. Provide with addressable control module. Relay based duct detectors not acceptable.

B. The duct mounted detector shall have an auxiliary set of contacts in order for the temperature controls contractor to tie in the starter of the fans. Contacts shall be rated 1A, 120V.

2.8 DUCT SMOKE DETECTOR REMOTE ALARM INDICATORS

A. Provide remote alarm indicator station for duct smoke detectors located above ceilings or in other locations above 10 feet and/or not readily accessible.

B. Provide LED alarm indicator designed for mounting in a single gang coverplate.

2.9 MANUAL STATIONS, INTELLIGENT

A. Provide single action intelligent manual stations where shown on the drawings, to be flush or surface mounted as required.

1. The manual stations shall be addressable and identifiable by the fire alarm control panel.

a. Address assignments shall be set mechanically or electronically and reside within the station in non-volatile memory.
b. Reset keys shall match previous projects.

2.10 ADDRESSABLE INTERFACE MODULE

A. Provide for integration of compatible two wire and shorting style contact devices into the analog signaling circuit. Intelligent analog signaling circuit interface module shall have the following capabilities:

1. Communication interaction with the analog signaling circuit having the capability of reporting alarm or trouble conditions from the devices monitored.

2. Compatibility with ionization, photoelectric, and linear beam style smoke detectors, heat detectors, and all listed contact type devices.

3. The module shall be addressable and identifiable by the control panel.

   a. Address assignments shall be set mechanically or electronically and reside within the module in non-volatile memory.

4. Water Flow Switches: The water flow switches shall be provided by the mechanical contractor and wired by the electrical contractor. The switches shall be connected to the fire alarm system through the use of addressable interface modules.

5. Tamper Switches: The tamper switches shall be provided by the mechanical contractor and wired by the electrical contractor. The switches shall be connected to the fire alarm system through the use of addressable interface modules.

6. Provide addressable interface modules to uniquely identify each flow and tamper switch.

2.11 ADDRESSABLE CONTROL MODULE

A. Provide for integration of auxiliary control functions into the analog signaling circuit. Intelligent analog signaling circuit control module shall have the following capabilities:

1. Communication interaction with the analog signaling circuit having the capability of initiating a control function to an auxiliary device based on a specified event.

2. Provide NO/NC contact pairs rated at 2 amps 120 VAC or 24 VDC.

2.12 NOTIFICATION APPLIANCES

A. Description: Equipped for mounting as indicated and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly.

2. Finishes:

   a. Wall mounted appliances: Provide red finish with white lettering.
   b. Ceiling Mounted Appliances: Provide white finish.

B. Voice/Tone Speakers:

1. UL 1480 listed.

2. High-Range Units: Rated 2 to 15 W.

3. Low-Range Units: Rated 1 to 2 W.

4. Matching Transformers: Tap range matched to the acoustical environment of the speaker location.

C. Visible Alarm Devices: Xenon strobe lights listed under UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.

1. Rated Light Output: 15, 30, 60, 75, 110, 135, 185 candela as required to meet NFPA 72 requirements.

2. Strobe Leads: Factory connected to screw terminals.

2.13 AUXILIARY DEVICES

A. Door Release: Magnetic door holder with integral diodes to reduce buzzing, 24 VDC coil voltage.

2.14 WIRE AND CABLE

A. Wire and cable for fire alarm systems shall be UL listed and labeled as complying with NFPA 70, Article 760.

B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.

1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70 Article 760, Classification CI, for power-limited fire alarm signal service. UL listed as Type FPL, and complying with requirements in UL 1424 and in UL 2196 for a 2-hour rating.

C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 16 AWG, minimum.

2. Line-Voltage Circuits: No. 12 AWG, minimum

PART 3 - EXECUTION

3.1 WARRANTY

A. All equipment and systems shall be warranted by the contractor for a period of two years following acceptance. The warranty shall include parts, labor, prompt field service, pick-up and delivery.

B. Provide two years testing and maintenance, which shall consist of:

1. Regularly and systematically examining all detectors, manual stations, panels, relays, pressure switches and accessories pertaining to the system.

2. Regularly and systematically examine, adjust and clear all the electrical and mechanical components of water flow switches.

3. Tests and written reports which certify that all initiating devices have been tested and which indicate the result of the inspection test as required by the authority having jurisdiction.

3.2 TESTS AND REPORTS

A. The contractor shall perform all electrical and mechanical tests required by the equipment manufacturer's certification form. In addition, they shall measure and adjust each of the ionization detectors to the maximum stable sensitivity setting. This must be performed with the detector at its operational location and under normal operational environmental conditions in the area. Bench settings are not acceptable. All test and report costs shall be in the unit price established for each device. A checkout report shall be prepared by the installation technicians and submitted in triplicate, one copy of which will be registered with the equipment manufacturer. The report shall include, but not be limited to:

1. A complete list of equipment installed and wired.

2. Indication that all equipment is properly installed and functions and conforms with these specifications.

3. Test of individual zones as applicable.

4. Serial numbers, locations by zone and model number for each installed detector.

5. Voltage (sensitivity) settings for each ionization and photoelectric detector as measured in place with the HVAC system operating.

6. Response time on thermostats and flame detectors (if used).

7. Technician's name, certificate number and date.

B. After completion of all the tests and adjustments listed above, the contractor shall submit the following information to the Architect:

1. "As-built" conduit layout diagrams including wire color code and/or tag number.

2. Complete "as-built" wiring diagrams.

3. Detailed catalog data on all installed system components.

4. Copy of the test report.

C. Final tests and inspection shall be held in the presence of engineer. The contractor shall supply personnel and required auxiliary equipment for this test without additional cost.

D. The completed smoke detection system shall be tested to insure that it is operating properly. Acceptance of the system shall also require a demonstration of the stability of the system. This shall be adequately demonstrated if the system operates for a ninety (90) day test period.

E. Before final acceptance of work, the contractor shall deliver five copies of a composite "Operating and Shop Maintenance Manual." Each manual shall contain, but not be limited to: a statement of guarantee including date of termination and name and phone number of the person to be called in the event of equipment failure.

F. Individual factory issued manuals shall contain all technical information on each piece of equipment installed. In the event such manuals are not obtainable form the factory, it shall be the responsibility of the contractor to compile and include them. Advertising brochures or operational instructions shall not be used in lieu of the required technical manuals.

3.3 INSTALLATION

A. Control and other panels shall be mounted with sufficient clearance for observation and testing.

B. All fire alarm junction boxes must be clearly marked for easy identification as indicated in 16195. All wiring shall be in conduit unless noted otherwise on the contract documents or in the specifications. Flexible connectors shall be used for all devices mounted in suspended lay-in ceiling panels. All conduit, mounting boxes, junction boxes and panels shall be securely hung and fastened with appropriate fittings to insure positive grounding throughout the entire system.

C. Fire alarm pull stations and horns installed in finished areas shall be mounted semi-flush and may be surface mounted in non-finished areas. Smoke detectors and thermal detectors shall be mounted on a recess mounted junction box in finished areas and to surface mounted junction boxes in non-finished areas.

D. No wiring other than that directly associated with fire alarm detection, alarm or auxiliary fire protection functions shall be permitted in fire alarm conduits. Wiring splices are to be avoided to the extent possible, and if needed they must be made only in junction boxes and shall be crimp connected. Transposing or changing color coding of wires shall not be permitted. Wire nut-type connections are not acceptable. All conductors in conduit containing more than one wire shall be labeled on each end with "E-Z markers" or equivalent. Conductors in cabinets shall be carefully formed and harnessed so that each drops off directly opposite to its terminal. Cabinet terminals shall be numbered and coded. All controls, function switches, etc., shall be clearly labeled on all equipment panels. All wiring shall be checked and tested to insure that there are no grounds, opens or shorts.

E. Install manual station flush mounted with operating handle 48 inches maximum above floor. Install audible and visual signal devices no more than 96 inches above highest floor level within the space or 6 inches below the ceiling, whichever is lower.

F. Mount outlet box for electric door holder to withstand 80 pounds pulling force.

G. Make conduit and wiring connections to door release devices, sprinkler flow switches, sprinkler valve tamper switches, panels, duct smoke detectors, and other auxiliary supervised devices.

H. Automatic Detector Installation: NFPA 72.

I. All gymnasiums and locker rooms fire alarm devices shall be provided with protective wire guards.

J. Fire alarm system cable shall be plenum rated, with red outer coloring. All cable drops to devices shall be in conduit (concealed in walls).Cabling installed in open ceiling spaces shall be type FPLP, low smoke, fire resistant, with red coloring. Cabling shall be per manufacturer’s recommendation, and shall be able to power the strobes and horn/strobes together, or independently.

K. Install fire alarm cable in ceiling spaces to avoid damage. Use bridle rings and other similar means of support (lay-in ceiling areas).

L. Cabling to the Fire Alarm Control Panel and drops to devices shall be in recessed conduit.

M. Fire alarm cabling in exposed ceiling spaces and above drywall ceiling areas shall be in conduit. Conduit used for fire alarm system shall have couplings and junction boxes painted red.

END OF SECTION

ARCHITECTURE

T M P ARCHITECTURE I N C
1191 WEST SQUARE LAKE ROAD · BLOOMFIELD HILLS · MICHIGAN · 48302
PH · 248.338.4561 FX · 248.338.0223 EM · INFO@TMP-ARCHITECTURE.COM

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Troy, Michigan 48098-3276
Tel: 248-879-5666
Fax: 248-879-0007
www.PeterBassoAssociates.com

HAMILTON ELEMENTARY SCHOOL REMODELING

TROY SCHOOL DISTRICT - TROY, MICHIGAN

2013 BOND PROGRAM - BID PACKAGE NO. 31

PROJECT NUMBER: 13160D

CONSTRUCTION DOCUMENTS

CONSULTANTS:

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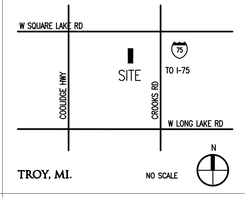
LIST OF DRAWINGS

PROJECT DATA:

LOCATION MAP



TROY, MI. NO SCALE

ADDRESS: HAMILTON ELEMENTARY SCHOOL
5625 NORTHFIELD PKWY
TROY, MI 48098

BUILDING:

BUILDING AREA(S) = 64,470 SQ. FT. (EXISTING)

CODE:

GOVERNING CODES :

- 2016 SCHOOL FIRE SAFETY RULES
  (2012 Life Safety Code, plus amendments)
- 2015 MICHIGAN BUILDING CODE
- 2015 MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
- 2015 MICHIGAN PLUMBING CODE
- 2015 MICHIGAN MECHANICAL CODE
- 2015 MICHIGAN UNIFORM ENERGY CODE
  (ANSI/ASHRAE/IES Standard 90.1-2013)
- 2017 MICHIGAN ELECTRICAL CODE (2017 NEC, plus Part 8 Rules)
- 2010 MICHIGAN ELEVATOR RULES
  (ASME A17.1-2010, ASME A18.1-2011)
- MICHIGAN BARRIER FREE CODE
  (Michigan Building Code 2015 and ICC A117.1-2009)
- 2013 MICHIGAN BOILER CODE RULES
  (ASME Boiler and Pressure Vessel Code, 2010 edition, plus 2011a addenda)
  (National Board Inspection Code [NBIC], 2011 edition)

DATE	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

LICENSEE'S STATEMENT:

This Document has been prepared under the supervision of the Architect, as the person in Responsible Charge with the firm of TMP ARCHITECTURE, INC. An original embossed or rubber stamp seal and original signature of the Architect is required and shall be affixed to any copy of this Document submitted to a governmental agency for approval or record. This is in conformance with the State of Michigan's PA 299, Article 20 and the General Rules of the Board of Architects.

The Architect's seal provided hereon does not take responsibility for certain portions of the Documentation or project requiring the services of a licensed Professional Engineer or other design professional. An original embossed or rubber stamp seal and original signature of the Professional Engineer is required and shall be affixed to any copy of this or other Document submitted to a governmental agency for approval or record. The engineering firms associated with this document are listed above as Consultants.

REGISTRATION SEALS

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PROJECT TITLE

Hamilton Elem. School Remodeling

PROJECT NO.

13160D

DRAWING NO.

TS.1

ABBREVIATIONS

A

ABV.	ABOVE
A.F.F.	ABOVE FINISH FLOOR
A.R.F.	ABOVE REFERENCE FLOOR
ABR.	ABRASIVE
ABS.	ABSORBING
ACC.	ACCESS
ACC. PNL	ACCESS PANEL
AC.	ACOUSTIC/ACOUSTICAL
ACT	ACOUSTIC TILE
AC. INSUL.	ACOUSTIC INSULATION
ADD.	ADDENDUM
ADDN.	ADDITION
ADDNL.	ADDITIONAL
ADH.	ADHESIVE
ADJ.	ADJUSTIBLE
AGGR.	AGGREGATE
A.C.B.	AIR CIRCUIT BREAKER
A/C	AIR CONDITIONING
A.C.C.	AIR CONDITIONING COMPRESSOR
A.C.U.	AIR CONDITIONING UNIT
A.H.U.	AIR HANDLING UNIT
ALT.	ALTERNATE
ALUM./AL	ALUMINUM
AMT	AMOUNT
AMP	AMPHERE
AMPL.	AMPLIFIER
ANCH.	ANCHOR
A.B.	ANCHOR BOLT
&	AND
ANG./ L or ∠	ANGLE
ANOD.	ANODIZED
APT.	APARTMENT
APPR.	APPROVED
APPROX.	APPROXIMATE
ARCH.	ARCHITECT/ARCHITECTURAL
A–	ARCHITECTURAL DRAWING–NO.
A.T.	ASH TRAY
ATM	AUTOMATIC TELLER MACHINE
ASPH.	ASPHALT
ASSY.	ASSEMBLY
@	AT
AUTO.	AUTOMATIC
A.S.R.	AUTOMATIC SPRINKLER RISER
AUX.	AUXILIARY
AVG.	AVERAGE

B

B/B	BACK–TO–BACK
B.F.P.	BACK FLOW PREVENTER
B.D.D.	BACK DRAFT DAMPER
B.F.	BARRIER FREE
B.B.R.	BASE BOARD RADIATION
B.PL	BASE PLATE
BSMT	BASEMENT
B.	BATH ROOM
BM	BEAM
B/C	BACK OF CURB
BRG	BEARING
B.R.	BEDROOM
B.M.	BENCH MARK
BT	BENT
BETW.	BETWEEN
BEV.	BEVEL
BIT.	BITUMINOUS
B.I.	BLACK–IRON
BLK	BLOCK
BLKG	BLOCKING
BD	BOARD
BLR	BOILER
BLR. F.	BOILER FEED
BLR. H.	BOILER HOUSE
BK. SH.	BOOK SHELVES
B.S.	BOTH SIDES
B.W.	BOTH WAYS
BOT.	BOTTOM
BOT. EL.	BOTTOM ELEVATION
BLVD	BOULEVARD
BDRY	BOUNDARY
BRKT	BRACKET
BR.	BRASS
BRKR	BREAKER
BRK	BRICK
BTU	BRITISH THERMAL UNIT
BRZ	BRONZE
BLDG.	BUILDING
B.L.	BUILDING LINE
B.U.R.	BUILT–UP ROOFING
B.N.	BULLNOSE
BLKD	BULKHEAD
BULL.	BULLETIN
B.A.	BURGLAR ALARM
BUZZ.	BUZZER

C

CAB.	CABINET
C.U.H.	CABINET UNIT HEATER
CAP.	CAPACITY
CPT	CARPET
C.R.S.	CARPET REDUCER STRIP
CSMT	CASMENT
CSWRK	CASEWORK
CSG	CASING
C.I.	CAST IRON
C.I.F.	CAST IRON FRAME
C.I.P.	CAST IRON PIPE/CAST–IN–PLACE
CSTG	CASTING
CAT. NO.	CATALOG NUMBER
C.B.	CATCH BASIN
CLG.	CEILING
C.D.	CEILING DIFFUSER
CLG. HT.	CEILING HEIGHT
CEM.	CEMENT
CEM. PLAS.	CEMENT PLASTER
CTR	CENTER
℄	CENTERLINE
C/C	CENTER–TO–CENTER
CER.	CERAMIC
C.T.	CERAMIC TILE
C.BD.	CHALKBOARD
CHAM.	CHAMFER
CHG.	CHANGE
CHAN. or [	CHANNEL
CHKD. PL.	CHECKERED PLATE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHD	CHORD
CIRCUM.	CIRCUMFERENCE
CIR.	CIRCLE/CIRCULAR
CIRC.	CIRCUIT
C.BR	CIRCUIT BREAKER
C–	CIVIL DRAWING–NO.
CL.	CLASS
CLRM	CLASSROOM
C.O.	CLEAN OUT
CLR	CLEAR
CLR GL	CLEAR GLASS
CLR W.GL	CLEAR WIRE GLASS
CL.	CLOSET
CLO.	CLOSURE
C.CL.	COAT CLOSET
COEF.	COEFFICIENT
CW	COLD WATER
COL.	COLUMN
CO.	COMPANY
COMPT.	COMPARTMENT
COMPO.	COMPOSITION
CA	COMPRESSED AIR
COMPR.	COMPRESSOR
CONC.	CONCRETE
C.M.U.	CONCRETE MASONRY UNIT
CWR	CONDENSING WATER RETURN
CWS	CONDENSING WATER SUPPLY
COND.	CONDUIT
CONF.	CONFERENCE
CONN.	CONNECT
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
CRS.	COURSE
COV.	COVER
COV. PL.	COVER PLATE
C.C.T.	CUBICAL CURTAIN TRACK
CU.FT.	CUBIC FEET/ CUBIC FOOT
CFM	CUBIC FEET PER MINUTE
CY	CUBIC YARD
CULV.	CULVERT
C.D.	CUP DISPENSER
CYL.	CYLINDER
CYC.	CYCLES

D

DMPR	DAMPER
DMPFG	DAMPPROOFING
D.L.	DEAD LOAD
DB	DECIBLE
D.	DEEP
DWG.	DRAWING
DMT. PARTN	DEMOUNTABLE PARTITION
DEPT.	DEPARTMENT
DEPR.	DEPRESSED
DES.	DESIGN
DET.	DETAIL
D.E. CO.	DETROIT EDISON COMPANY
DIAG.	DIAGONAL
DGM	DIAGRAM
DIA.	DIAMETER
DIFF.	DIFFUSER
DIM.	DIMENSION
D.R.	DINING ROOM
DIR.	DIRECTORY
DISC.	DISCONNECT
DISCONT.	DISCONTINUOUS
DW	DISHWASHER
DISP.	DISPENSER
DIST.	DISTANCE
D.P.	DISTRIBUTION PANEL
DO	DITTO (DO OVER)
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
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
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
ELAST.	ELASTOMERIC
ELAST. FLASH.	ELASTOMERIC FLASHING
ELAST. W.P.	ELASTOMERIC WATERPROOFING
E.S.R.	ELASTOMERIC SHEET ROOFING
ELEC.	ELECTRIC/ELECTRICAL
ELEC. CL.	ELECTRICAL CLOSET
ELEC. CAB.	ELECTRICAL CABINET
E.C.	ELECTRICAL CONTRACTOR
E–	ELECTRICAL DRAWING–NO.
E.P.	ELECTRICAL PANEL
EWC	ELECTRIC WATER COOLER
ELEC. OPER.	ELECTRICALLY OPERATED
EL.	ELEVATION
ELEV.	ELEVATOR
EMERG.	EMERGENCY
ENCL.	ENCLOSURE
ENGR	ENGINEER
E/E	END–TO–END
ENTR.	ENTRANCE/ENTRY
EP.	EPOXY
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
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.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
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 or '	FEET/FOOT
FPM	FEET PER MINUTE
FN	FENCE
F.BD.	FORM BOARD
FIG.	FIGURE
FIN.	FINISH/FINISHED
FIN. FLR/F.F.	FINISH FLOOR
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
F.R.T.WD	FIRE RETARDANT TREATED WOOD
F.V.C.	FIRE VALVE CABINET
FP.	FIREPLACE
FPRFG.	FIREPROOFING
FIXT.	FIXTURE
FLASH.	FLASHING
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLAT HEAD WOOD SCREW
F.C.	FLEXIBLE CONNECTION
FLR	FLOOR
F.C.O.	FLOOR CLEAN OUT
F.D.	FLOOR DRAIN
FLR. FIN.	FLOOR FINISH
FLUOR.	FLUORESCENT
FLDG	FOLDING
FTG	FOOTING
FM. BD	FORMBOARD
FDN	FOUNDATION
FR.	FRAME
FR/COV.	FRAME AND COVER
FRMG	FRAMING
FRZR	FREEZER
F.S.	FULL SIZE
FURN.	FURNISH/FURNISHED
FURR.	FURRING/FURRED
FUT.	FUTURE

G

GA.	GAUGE
GAL.	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GALV.	GALVANIZED
GALV. I.	GALVANIZED IRON
G	GAS
GSKT	GASKET
G.V.& B.	GATE VALVE AND BOX
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.I.	GROUND FAULT INTERRUPTOR
GT	GROUT
G.	GUTTER ELEVATION
GYP.	GYPSUM
GYP.BD.	GYPSUM BOARD

H

HNDCP	HANDICAPPED
H.R.	HANDRAIL
H.BD	HARDBOARD
HDWE	HARDWARE
HDWD	HARDWOOD
HD	HEAD
HDR	HEADER
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
HHWR	HEATING HOT WATER SUPPLY
HHWS	HEATING HOT WATER RETURN
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
HNYCB	HONEYCOMB
HK	HOOK
HORIZ.	HORIZONTAL
HP	HORSEPOWER
H.B.	HOSE BIBB
H.S.P.	HOSE STAND PIPE
H.V.C.	HOSE VALVE CABINET
HOSP.	HOSPITAL
H.W.	HOT WATER
HWR	HOT WATER RETURN
HWS	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
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
KVA	KILOVOLT AMPHERE
KW	KILOWATT
K	KIP (1000#)
KIT.	KITCHEN
K.S.	KNEE SPACE
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–NO.
LGE	LARGE
LDRY	LAUNDRY
LAV.	LAVATORY
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
LTWT. CONC.	LIGHTWEIGHT CONCRETE
LMS	LIMESTONE
LTL	LINTEL
LIN. DIFF.	LINEAR DIFFUSER
L.F.	LINEAR FEET/FOOT
LIQ	LIQUID
LPG	LIQUID PROPANE GAS
L.P.G.	LIQUID PETROLEUM GAS
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. or #	POUNDS

M

MACH.	MACHINE
M.B.	MACHINE BOLT
MACH. RM	MACHINE ROOM
M.A.U.	MAKE–UP AIR UNIT
M.D.P.	MAIN DISTRIBUTION PANEL
M.S.B.	MAIN SWITCH BOARD
MAINT.	MAINTENANCE
MH.	MANHOLE
MFR	MANUFACTURER
MAR.	MARBLE
MK	MARK
MAS.	MASONRY
M.O.	MASONRY OPENING
MATL	MATERIAL
MAX.	MAXIMUM
MECH.	MECHANICAL
M–	MECHANICAL DRAWING–NO.
M.C.	MEDICINE CABINET
MED.	MEDIUM
MEMB.	MEMBRANE
MET.	METAL
M.D.S.	METAL DIVIDER STRIP
M.E.S.	METAL EDGE STRIP
M.L.	METAL LATH
M.L.& PLAS.	METAL LATH AND PLASTER
M.T.	METAL THRESHOLD
MET. W.P.	METALLIC WATERPROOFING
MEZZ.	MEZZANINE
MDOT	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.D.	MOTOR OPERATED DAMPER
MLDG	MOULDING
MTD	MOUNTED
MTG	MEETING/MOUNTING
MOV.	MOVEABLE
MOV. PARTN.	MOVEABLE PARTITION
MULL	MULLION
M	THOUSAND (1000)

N

NAT.	NATURAL
N.S.	NEAR SIDE
NEUT.	NEUTRAL
NRC	NOISE REDUCTION COEFFICIENT
NOM.	NOMINAL
NOR.	NORMAL
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
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
O.A.	OVERALL
OHD	OVERHEAD
OHD.DR	OVERHEAD DOOR
OXY.	OXYGEN

P

PTD	PAINTED
PR	PAIR
PG.	PAGE
PNL	PANEL
P.T.D.	PAPER TOWEL DISPENSER
P.T.W.R.	PAPER TOWEL WASTE RECEPTACLE
PRL	PARALLEL
PKG	PARKING
P.BD	PARTICLE BOARD
PRTN	PARTITION
PASS.	PASSAGE
PAT.	PATENT
PVMT	PAVEMENT
PVG	PAVING
PED.	PEDESTAL
PERF.	PERFORATED
PERIM.	PERIMETER
PERM.	PERMANENT
PERP.	PERPENDICULAR
P. or ϕ	PHASE
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
PLWD	PLYWOOD
PT	POINT
P.T.	POINT OF TANGENCY
P.C.	POINT OF CURVATURE
POL.	POLISH/POLISHED
PVC	POLYVINYLCLORIDE
PORC.	PORCELAIN
PORC. ENAM.	PORCELAIN ENAMEL
POR.	POROUS
PORT.	PORTABLE
POS.	POSITION
P.I.V.	POST INDICATOR VALVE
PLF	POUNDS PER LINEAR FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PCF	POUNDS PER CUBIC FOOT
P.P	POWER PANEL
P/C	PRECAST
P.T.R.	PRECAST TERRAZZO RECEPTOR
PREFAB.	PREFABRICATED
PFN.	PREFINISHED
P.T.WD	PRESERVATIVE TREATED WOOD
P.G.	PRESSURE GAUGE
P.R.V.	PRESSURE REDUCING VALVE
PRIM.	PRIMARY
PROJ.	PROJECT/PROJECTION
PROP.	PROPERTY/PROPOSED
P.L.	PROPERTY LINE
P.A.	PUBLIC ADDRESS
P.S.	PURSE SHELF
P.B.	PUSH BUTTON

Q

QTY	QUANTITY
Q.T.	QUARRY TILE
QTR	QUARTER
QTR. RD	QUARTER ROUND

R

RBT	RABBET
RAD. or R.	RADIUS
R.W.C.	RAIN WATER CONDUCTOR
R.R.	RAILROAD
RECV.	RECEIVE/RECEIVING
RECPT.	RECEPTACLE
R.P.	RECEPTACLE PANEL
REC.	RECESS
RECT.	RECTANGLE/RECTANGULAR
RED.	REDUCER
RWD	REDWOOD
REF.	REFER/REFERENCE
REFL.	REFLECTED/REFLECTIVE
REFR.	REFRIGERATOR
REG.	REGISTER
REINF.	REINFORCE/REINFORCING/ REINFORCEMENT
REM.	REMOVE/REMOVABLE
REP.	REPAIR
REQ'D.	REQUIRED
RESIL.	RESILIENT
RET.	RETURN
R.A.	RETURN AIR
R.A.D.	RETURN AIR DIFFUSER
R.A.F.	RETURN AIR FAN
REV.	REVISED/REVISION
RPM	REVOLUTIONS PER MINUTE
R.	RISER
R.H.	RIGHT HAND
R.H.R.B.	RIGHT HAND REVERSE BEVEL
R.O.W.	RIGHT OF WAY
RVT	RIVET
RD	ROAD
R.S.C.	ROLLING STEEL CURTAIN
RF	ROOF
R.C.	ROOF CONDUCTOR
R.D.	ROOF DRAIN
RF.H.	ROOF HATCH
R.S.	ROOF SUMP
R.V.	ROOF VENTILATOR
RFG	ROOFING
R.T.U.	ROOF TOP UNIT
RM	ROOM
R.O.	ROUGH OPENING
RND or ϕ	ROUND
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
R.T.	RUBBER TILE

S

SAN.	SANITARY
S.N.D.	SANITARY NAPKIN DISPENSER
S.N.R.	SANITARY NAPKIN RECEPTACLE
SCHED.	SCHEDULE
SCN	SCREEN
STG	SEATING
SECT.	SECTION
SERV.	SERVICE
S.S.	SERVICE SINK
SHTHG	SHEATHING
SHT	SHEET
SHT. MET.	SHEET METAL
SH.& R.	SHELF AND ROD
SHWR	SHOWER
S.C.R.	SHOWER CURTAIN ROD
S.DR	SHOWER DOOR
S.W.	SIDEWALK
SIM.	SIMILAR
SGL.	SINGLE
SK	SINK
S.D.	SOAP DISPENSER
S.C.	SOLID CORE
STC	SOUND TRANSMISSION CLASS
S	SOUTH
SP.	SPACE
SPR.	SPARE
SPKR	SPEAKER
SPEC.	SPECIFICATIONS
S.D.	SPLITTER DAMPER
SPRYD	SPRAYED
SPKLR	SPRINKLER
SQ.	SQUARE
S.F.	SQUARE FEET/SQUARE FOOT
STAG.	STAGGERED
ST.STL	STAINLESS STEEL
STD	STANDARD
SP.	STANDPIPE
S.P.	STATIC PRESSURE
STA.	STATION
STM	STEAM
STL	STEEL
STL. PL.	STEEL PLATE
STIFF.	STIFFENER
STO. FR.	STOREFRONT
STOR.	STORAGE
STR.	STRAIGHT
ST.	STREET
STRUCT.	STRUCTURAL
S–	STRUCTURAL DRAWING–NO.
S.G.F.T.	STRUCTURAL GLAZED FACING TILE
S.STL	STRUCTURAL STEEL
SS.D.	SUBSOIL DRAIN
SS.D.C.	SUBSOIL DRAIN CONNECTION
SUB.	SUBSTATION
S.A.G.	SUPPLY AIR GRILLE
S.D.	SUPPLY DIFFUSER/ DUCT
SUBST.	SUSTITUTE
S.A.R.	SUPPLY AIR REGISTER
S.F.	SUPPLY FAN

S

SW.	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMBOL/ SYMMETRICAL
SYS.	SYSTEM
SUPP.	SUPPORT
SURF.	SURFACE/ SURFACING
SUSP.	SUSPEND/ SUSPENSION

T

T.BD	TACKBOARD
TAN.	TANGENT
TECH.	TECHNICAL
TEL.	TELEPHONE
TEL. CAB.	TELEPHONE CABINET
TV	TELEVISION
TV.M	TELEVISION MONITOR
TEMP.	TEMPERATURE
TEMP. GL.	TEMPERED GLASS
T.U.	TERMINAL UNIT
TERR.	TERRAZZO
T.B.	TEST BORING
T.	THERMOSTAT
THK	THICK/ THICKNESS
T.S.	THICKENED SLAB
THD	THREAD
THRESH.	THRESHOLD
THRU	THROUGH
T.	TILE
T./ TOIL.	TOILET
T.P.D.	TOILET PAPER DISPENSER
T.P.H.	TOLET PAPER HOLDER
T & G	TONGUE AND GROOVE
T & B	TOP AND BOTTOM
T/C	TOP OF CURB
T/EL.	TOP ELEVATION
T/F	TOP OF FOOTING
T/G	TOP OF GUTTER
T/M	TOP OF MASONRY
T/P	TOP OF PARAPET
T/P	TOP OF PAVEMENT
T/R	TOP OF RIM
T/S	TOP OF STEEL
T/W	TOP OF WALL
T.B.	TOWEL BAR
T.D.	TOWEL DISPENSER
TD & WR	TOWEL DISPENSER AND WASTE RECEPTACLE
T.G.	TRANSFER GRILLE
TRFR	TRANSFORMER
TRAN.	TRANSOM
T	TREAD
T.D.	TRENCH DRAIN
TS	TUBE SECTION
T.V.	TURNING VANE
T.T.	TWIN TEE
TYP.	TYPICAL

U

U.C.	UNDERCUT
U.G.	UNDER GROUND
UL	UNDERWRITER'S LABORATORY
ULT.	ULTIMATE
UNFIN.	UNFINISHED
U.H.	UNIT HEATER
U.SUB.	UNIT SUBSTATION
U.V.	UNIT VENTILATOR
USGS	UNITED STATES GEOLOGICAL SURVEY
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL

V

VAC.	VACUUM
V.B.	VACUUM BREAKER
V.C.O.	VACUUM CLEANER OUTLET
V. BARR.	VAPOR BARRIER
VAR.	VARIABLE
VARN.	VARNISH
VNR	VENEER
V. PLAS.	VENEER PLASTER
V.	VENT
VTR	VENT THRU ROOF
VENT.	VENTILATE/ VENTILATION
V.I.F.	VERIFY IN FIELD
VS.	VERSUS
VERT.	VERTICAL/ VERTICALLY
VERT. C.	VERTICAL CURVE
VEST.	VESTIBULE
V.I.	VIBRATION ISOLATOR
VNY	VINYL
VCT	VINYL COMPOSITION TILE
VIN. FAB.	VINYL FABRIC
V.R.S.	VINYL REDUCER STRIP
VIT.	VITREOUS
VCP	VITRIFIED CLAY PIPE
VOL.	VOLUME
V.D.	VOLUME DAMPER
V	VOLTS

W

WAINS.	WAINSCOT
W.CAB.	WALL CABINET
W.C.O.	WALL CLEAN OUT
W.H.	WALL HYDRANT
W/W	WALL–TO–WALL
W.V.	WALL VENT
WHSE	WAREHOUSE
W.F.	WASH FOUNTAIN
W.	WASTE/ WATTS
W & V	WASTE AND VENT
W.R.	WASTE RECEPTACLE
W.C.	WATER CLOSET
W.G.	WATER GAUGE
W.H.	WATER HEATER
WP	WATERPROOFING
W.PRFG.	WEATHERPROOFING
W.STPG.	WEATHERSTRIPPING
WT.	WEIGHT
W.W.F.	WELDED WIRE FABRIC
W	WEST
W.B.	WET BULB
W.	WIDE/ WIDTH
W_x_	WIDE FLANGE SECTION
WT	WIDE FLANGE TEE SECTION
W.O.	WINDOW OPENING
W.GL.	WIRE GLASS
W.M.	WIRE MESH
w/	WITH
w/o	WITHOUT
WD	WOOD
W.L.	WORK LINE
W.P.	WORK POINT
W.I.	WROUGHT IRON

X

Y

YD	YARD
Y.P.	YIELD POINT
Y.S.	YIELD STRENGTH
YR	YEAR

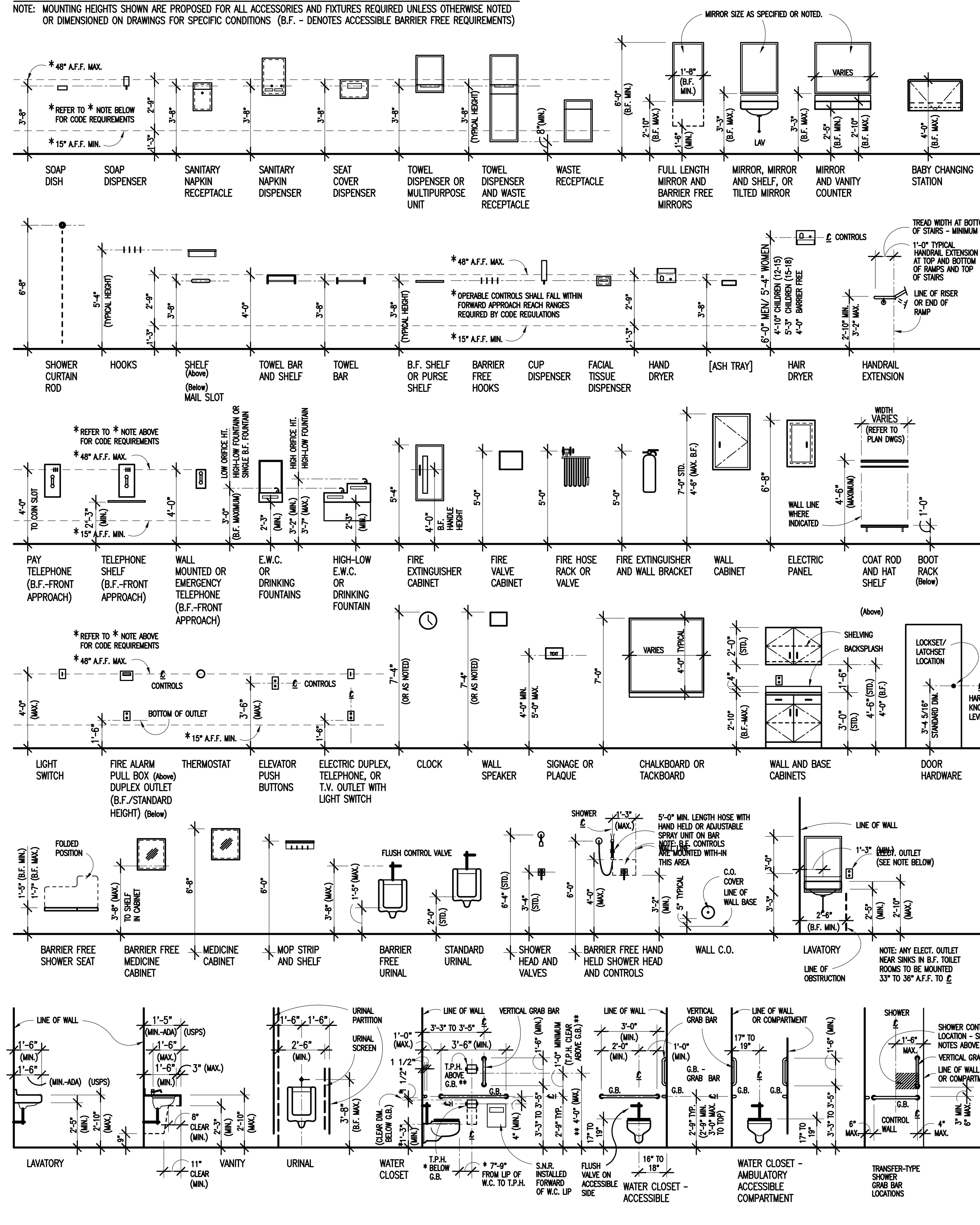
Z

ZC	ZINC

TYPICAL MOUNTING HEIGHTS

MISCELLANEOUS ACCESSORIES, TOILET ACCESSORIES AND FIXTURES

NOTE: MOUNTING HEIGHTS SHOWN ARE PROPOSED FOR ALL ACCESSORIES AND FIXTURES REQUIRED UNLESS OTHERWISE NOTED OR DIMENSIONED ON DRAWINGS FOR SPECIFIC CONDITIONS (B.F. - DENOTES ACCESSIBLE BARRIER FREE REQUIREMENTS)



MATERIAL DESIGNATIONS

ELEVATION | SECTION | MATERIAL

- BRICK
- CONCRETE MASONRY UNITS (BLOCK)
- SOLID CONCRETE MASONRY UNITS
- PREFACED CONCRETE MASONRY UNITS
- STRUCTURAL GLAZED FACING TILE
- CONCRETE
- STONE/ SLATE/ OR GRANITE
- EARTH
- POROUS FILL (GRAVEL OR STONE)
- COMPACTED DRAINAGE FILL (SAND)
- MARBLE
- STEEL AND FERROUS METAL (Large Scale)
- ALUMINUM AND NON-FERROUS METAL (Large Scale)
- FINISH HARDWOOD
- WOOD BLOCKING/ NAILER (Continuous)
- WOOD BLOCKING/ NAILER (Non-continuous)
- PARTICLE BOARD (Large Scale)
- PLYWOOD (Large Scale)
- HARDWOOD VENEER PLYWOOD (Large Scale)
- PLASTIC LAMINATE CLAD PLYWOOD OR PARTICLE BOARD (Large Scale)
- BATT OR BLANKET INSULATION
- RIGID INSULATION
- ACOUSTICAL CEILING TILE OR PANEL
- GLASS (Large Scale)
- GLASS (Small Scale)
- GYPSUM DRYWALL (WALLBOARD)
- PLASTER OR VENEER PLASTER
- CEMENT PLASTER AND METAL LATH
- CERAMIC TILE (Large Scale)
- TERRAZZO (Large Scale)
- CARPET (Large Scale)(Large Scale)
- VINYL COMPOSITION TILE (V.C.T.)
- SEALANT AND BACKER ROD (Large Scale) (Depth Equal to Half Joint Width)
- JOINT FILLER MATERIAL OR ISOLATION JOINT FILLER (Large Scale)
- COLD FORMED METAL FRAMING
- STRUCTURAL STEEL SHAPES (Continuous Sections Hatched or Solid, Non-continuous Sections Open)

REFERENCE SYMBOLS

DETAIL IDENTIFICATION

DETAIL IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1. / A1.1 — DETAIL TITLE

SCALE: 1/8" = 1'-0"

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE DETAIL IS DRAWN)

DETAIL LOCATION INDICATION

DETAIL IDENTIFICATION NUMBER

(WALL SECTIONS) (PLAN SECTIONS)

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN)

DETAIL LOCATION INDICATION FOR ENLARGED PLANS

DETAIL IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN)

SECTION IDENTIFICATION

SECTION IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1. / A1.1 — SECTION TITLE

SCALE: 1/8" = 1'-0"

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE SECTION IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE SECTION IS DRAWN)

SECTION LOCATION INDICATION

SECTION IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE SECTION IS DRAWN)

ELEVATION IDENTIFICATION

ELEVATION IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1. / A1.1 — ELEVATION TITLE

SCALE: 1/8" = 1'-0"

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE ELEVATION IS DRAWN)

ELEVATION INDICATION

ELEVATION IDENTIFICATION NUMBER(S) (SAME LETTER ON SHEET WHERE DRAWN OR REFERENCED)

INDICATES DIRECTION OF VIEW OR MULTIPLE VIEWS

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN)

MATCH LINE INDICATION

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER OF DRAWING)

ZONE 'A' / ZONE 'B'

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DRAWING IS CONTINUED)

DOOR INDICATION

DOOR SWING INDICATION– NEW DOOR

DOOR SWING INDICATION– EXISTING DOOR

DOOR SWING INDICATION– EXISTING DOOR TO BE REMOVED

ROOM NAME AND NUMBER INDICATION

SAMPLE ROOM NAME

A100 | –

OWNER ROOM NUMBER

CONTRACT DOCUMENT ROOM NUMBER

ROOM IDENTIFICATION BY FLOOR AND/OR ZONE SHALL BE AS FOLLOWS:

BASEMENT DOORS ·········· 001	ZONE A ··· A101
FIRST FLOOR DOORS ······· 101	ZONE B ··· B101
SECOND FLOOR DOORS ··· 201	ZONE C ··· C101
THIRD FLOOR DOORS ······· 301	

CONTINUES FOR AS MANY FLOORS REQUIRED.

DOOR IDENTIFICATION

DOOR TO ROOM SHALL REPEAT ROOM NUMBER ASSIGNED TO ROOM. MULTIPLE DOORS TO ROOM SHALL REPEAT ROOM NUMBER WITH A POSTSCRIPT LETTER FOR EACH ADDITIONAL DOOR REQUIRED.

101 / 101A / 101B FOR NUMBER NEEDED

DOOR IDENTIFICATION BY FLOOR AND/OR ZONE SHALL BE AS FOLLOWS:

BASEMENT DOORS ·········· 001	ZONE A ··A101
FIRST FLOOR DOORS ······· 101	ZONE B ··B101
SECOND FLOOR DOORS ··· 201	ZONE C ··C101
THIRD FLOOR DOORS ······· 301	

CONTINUES FOR AS MANY FLOORS REQUIRED.

COLUMN INDICATION

COLUMN IDENTIFICATION LETTER OR NUMBER FOR NEW CONSTRUCTION

COLUMN IDENTIFICATION LETTER OR NUMBER FOR EXISTING CONSTRUCTION

NORTH INDICATION

ASSUMED NORTH IF NOT TRUE NORTH OR PLAN NORTH WHERE TRUE NORTH IS INDICATED BY ARROW NOTATION

N

TRUE NORTH

WALL TYPE NOTATION

WALL CONSTRUCTION TYPE NUMBER AS LISTED IN 'WALL TYPE LEGEND'

DESCRIPTION ORIGINATES AT WALL SURFACE DESIGNATED

CASEWORK NOTATION

CASEWORK IDENTIFICATION NUMBER BASED ON MANUFACTURERS CATALOG NUMBERS AS NOTED IN SPECIFICATIONS OR 'CASEWORK LEGEND'

A1-100-36

KEYED NOTE INDICATION

KEYED NOTE IDENTIFICATION NUMBER AS LISTED IN 'NOTES' LEGEND.

(PLAN NOTATION)

KEYED NOTE IDENTIFICATION NUMBER AS LISTED IN 'NOTES' LEGEND.

(DEMOLITION NOTATION)

ADDENDUM INDICATION

ADDENDUM NUMBER

(CURRENT REVISIONS SHALL BE SHOWN ENCIRCLED BY A FREEFORM LINE)

BULLETIN INDICATION

BULLETIN NUMBER

(CURRENT REVISIONS SHALL BE SHOWN ENCIRCLED BY A FREEFORM LINE)

STAIR DIRECTION NOTATION

10 T. (11 R.) UP (DN)

STAIR DIRECTION TO FLOOR ABOVE (UP) OR BELOW (DOWN)

NUMBER OF TREADS (OR RISERS) IN STAIR RUN

DRAWING DIMENSION LINE INDICATION

10'-0"

NOTE: DO NOT SCALE DRAWINGS WITHOUT GRAPHIC SCALES WITH PROPORTIONS OTHER THAN 1:1

MATERIAL OR WORK DIVISION NOTATION

MATERIAL 'A' (NEW CONST.) | MATERIAL 'B' (EXIST. CONST.)

JOINT BETWEEN MATERIALS (OR CONSTRUCTION WORK DIVISION LINE)

DRAWING NOTATION INDICATION

MATERIAL NOTATION AND INFORMATION (REFER TO TECHNICAL SPECIFICATIONS FOR MATERIAL DESCRIPTIONS AND METHODS OF CONSTRUCTION)

TMP ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS · MICHIGAN · 48302
PH · 248.338.4561 FX · 248.338.0223
EM · INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE

General Information

ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

DRAWN	KJM
CHECKED	...
APPROVED	JJC

PROJECT NO.

13160D

DRAWING NO.

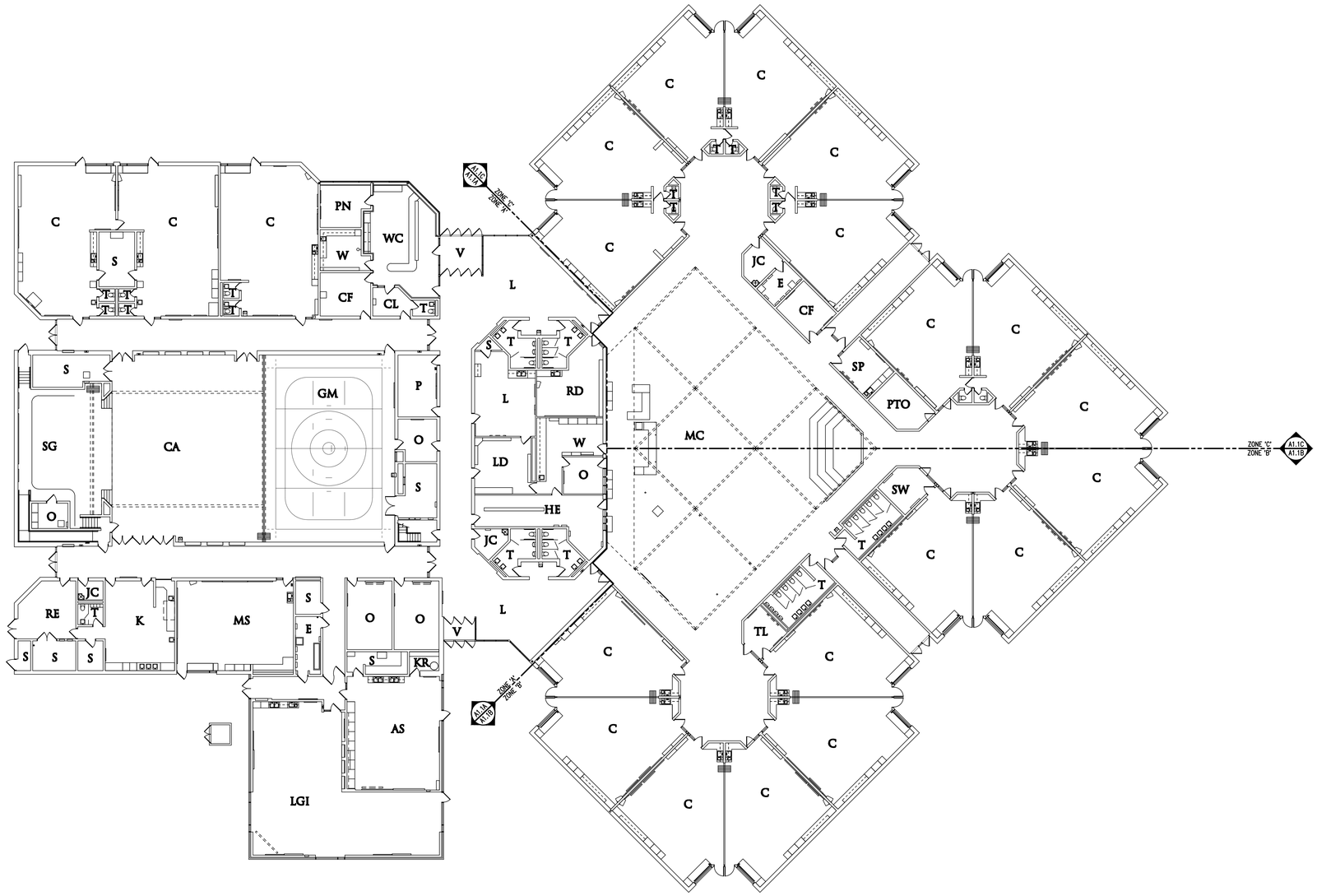
TG.1

ROOM USE LEGEND

AS	ART STUDIO	O	OFFICE
C	CLASSROOM	PN	PRINCIPAL
CA	CAFETERIA	PTO	PTO
CF	CONFERENCE ROOM	RD	READING
CL	CLINIC	RE	RECEIVING
E	ELECTRICAL	S	STORAGE
GM	GYMNASIUM	SG	STAGE
HE	HEAD END	SP	SPEECH
K	KITCHEN	SW	SOCIAL WORKER
KR	KILN ROOM	T	TOILET
JC	JANITOR'S CLOSET	TL	TITLE 1
L	LOBBY	V	VESTIBULE
LD	LEARNING DEPARTMENT	W	WORKROOM
LG	LOUNGE	WC	WELCOME CENTER
LGI	LARGE GROUP INSTRUCTION		
M	MECHANICAL		
MS	MUSIC		
MC	MEDIA CENTER		

BUILDING DATA

1. NO SUPERVISED AUTOMATIC SPRINKLER SYSTEM
2. CONSTRUCTION CLASSIFICATION TYPE II-000 (NFPA) & II-B (MBC)
3. USE CLASSIFICATION "E"



COMPOSITE MEZZANINE PLAN
SCALE: 1/16" = 1'-0"

COMPOSITE FLOOR PLAN
SCALE: 1/16" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS - MICHIGAN - 48302
PH - 248.338.4561 FX - 248.338.0223
EM - INFO @TMP-ARCHITECTURE.COM

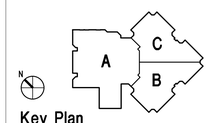
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE
Composite Floor Plan



Key Plan

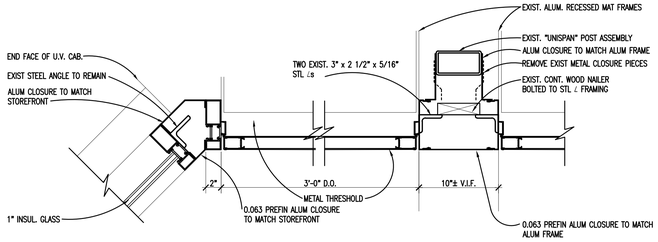
ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

DRAWN	KJM
CHECKED	...
APPROVED	JJC

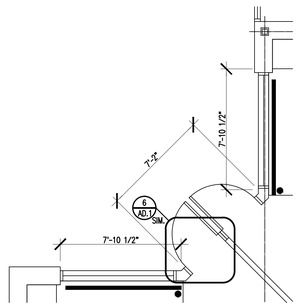
PROJECT NO.
13160D

DRAWING NO.
AC.1



6 / AD.1 ALUMINUM DOOR JAMB DETAIL

SCALE: 1 1/2" = 1'-0"

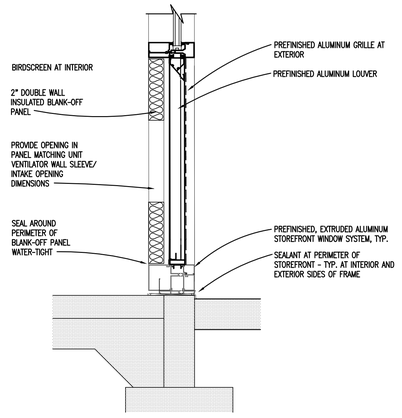


5 / A1.1B A1.1C TYPICAL CLASSROOM ENTRANCE

SCALE: 1/4" = 1'-0"

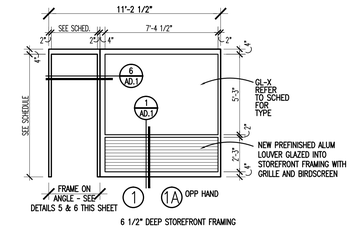
DOOR & FRAME SCHEDULE

Opening		Door				Frame				Details						Remarks
No.	Opening Size (Width x Height)	Type	Material	Finish	Glass	Type	Material	Finish	Glass	Head	Jamb	Sill	Threshold	U.L. Label	Hdwe. Set	
Zone 'A'																
Zone 'B'																
B102	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B103	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B104	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B112	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B113	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B114	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B115	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B116	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B117	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
Zone 'C'																
C102	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C105	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C108	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C111	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C114	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C117	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C128	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C131	3'-0" X 8'-0"	A	FRP	PFN	-	1A	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C134	3'-0" X 8'-0"	A	FRP	PFN	-	1	AL	PFN	GL-11	3/AD.2 & 4/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	

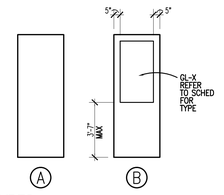


1 / AD.1 DETAIL AT LOUVER

SCALE: 1 1/2" = 1'-0"



FRAME TYPES



DOOR TYPES

DOOR SCHEDULE ABBREVIATIONS AND NOTES

(REFER TO SPECIFICATIONS FOR ADDITIONAL DOOR INFORMATION)

DOOR SCHEDULE ABBREVIATIONS

AL	ALUMINUM
ALGL	ALUMINUM AND GLASS
HM	HOLLOW METAL
WD	SOLID CORE HARDWOOD
PFN	PREFINISHED BY MANUFACTURER
PTD	PAINTED
MAR	SYNTHETIC MARBLE THRESHOLD
MET	METAL THRESHOLD
LAM	PLASTIC LAMINATE CLAD
FRP	FIBERGLASS REINFORCED POLYESTER
STSTL	STAINLESS STEEL
STL	STEEL

DOOR SCHEDULE GENERAL NOTES

1. GALVANIZED METAL TO BE PROVIDED FOR HOLLOW METAL DOOR AND/OR FRAME AT EXTERIOR LOCATION.
2. DOORS ARE 1-3/4" THICK UNLESS OTHERWISE NOTED.
3. DETAIL NUMBERS NOTED SIM. REFER TO DETAILS SHOWING HEAD, JAMB, AND/ OR SILL DETAILS THAT REPRESENT CONDITIONS SIMILAR TO THOSE NOTED.
4. HOLLOW METAL FRAMES SET IN MASONRY WALLS ARE 5 3/4" WIDE (U.O.N.).
5. HOLLOW METAL FRAMES, SET IN GYPSUM BD. /METAL STUD PARTITIONS, SHALL BE "DOUBLE BACK-BEND" FRAMES WITH A THROAT DIMENSION EQUAL TO THE PARTITION THICKNESS PLUS 9/16" RETURNS ON EACH SIDE OF THE PARTITION. PROVIDE EQUAL RABBETS.
6. AN ASTERISK (*) CALLS ATTENTION TO THE REMARKS COLUMN OF THE SCHEDULE.

U.L. DOOR LABEL DESIGNATIONS:

U.L. LABEL**	MIN. OPENING PROTECTION ASSEMBLY
180	3 HR. FIRE RATING
90	1-1/2 HR. FIRE RATING
60	1 HR. FIRE RATING
45	3/4 HR. FIRE RATING
20	1/3 HR. FIRE RATING

** ALL FIRE RATED DOORS SHALL BE SMOKE AND DRAFT CONTROL LABELED IN ADDITION TO U.L. LABELS INDICATED.

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE

Door & Frame Schedule

ISSUE DATES

12-16-2020	CONSTRUCTION DOCUMENTS

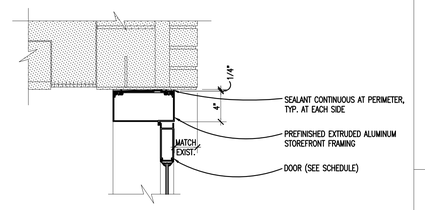
DATE:	ISSUED FOR:
DRAWN	KJM
CHECKED	...
APPROVED	JJC

PROJECT NO.

13160D

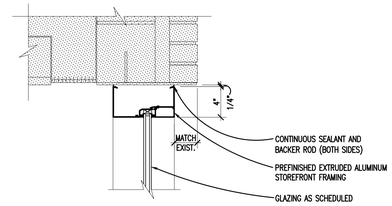
DRAWING NO.

AD.1



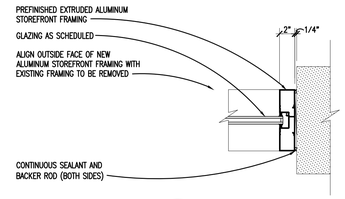
4 AD.1 ALUMINUM DOOR FRAME HEAD

SCALE: 1 1/2" = 1'-0"



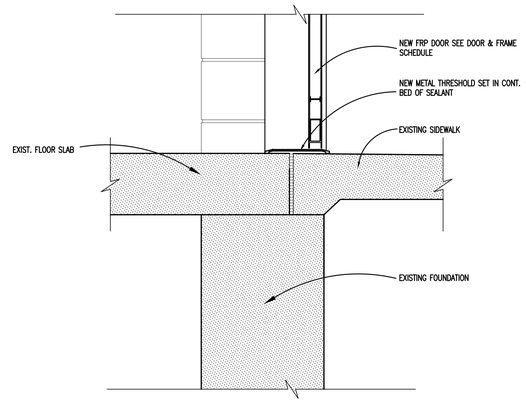
3 AD.1 ALUMINUM STOREFRONT HEAD

SCALE: 1 1/2" = 1'-0"



2 AD.1 ALUMINUM STOREFRONT JAMB

SCALE: 1 1/2" = 1'-0"



1 AD.1 NEW FRP DOOR SILL

SCALE: 1 1/2" = 1'-0"

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Troy, Michigan

DRAWING TITLE

Door & Frame Details

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12-16-2020	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:
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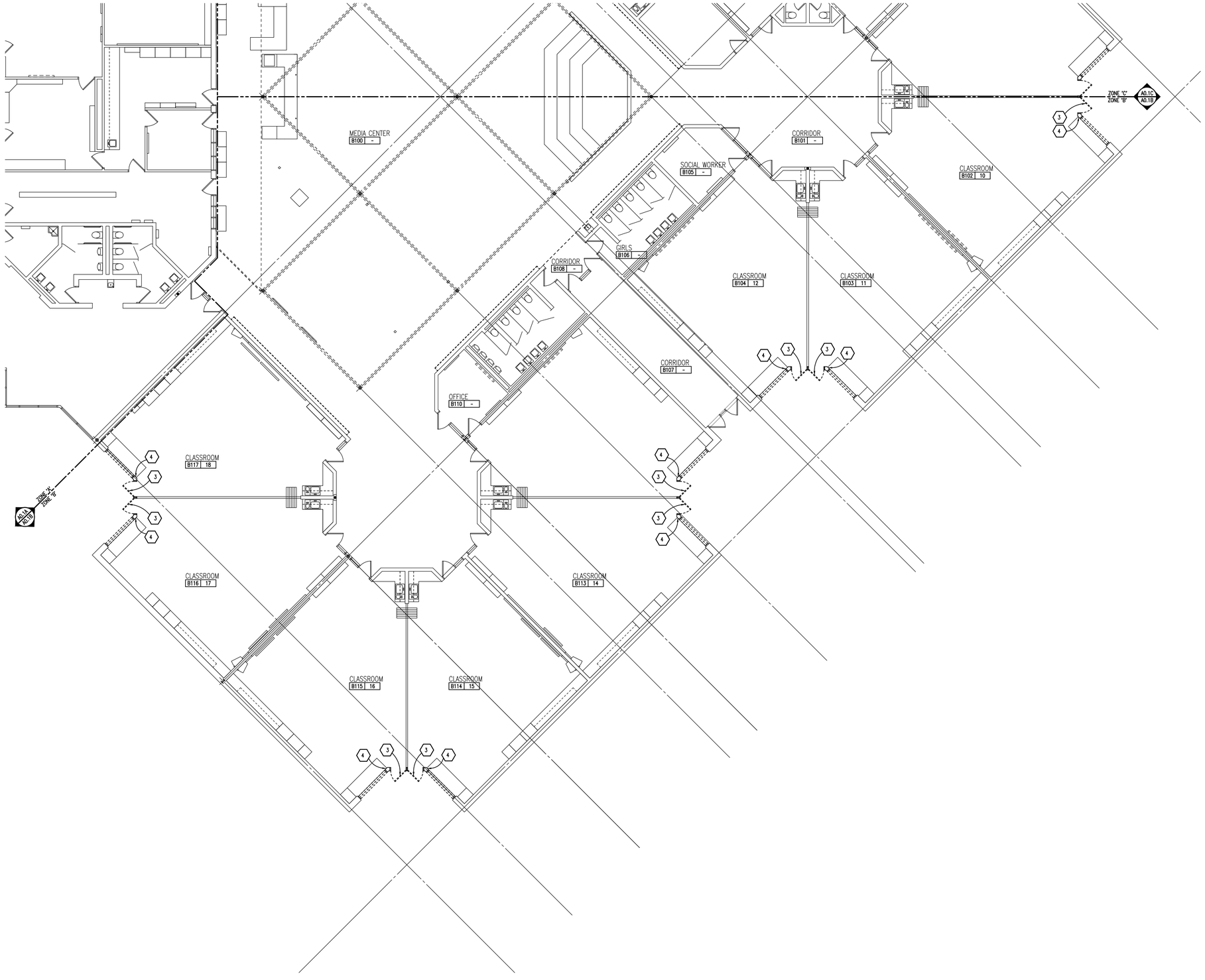
CHECKED	...
APPROVED	JJC

PROJECT NO.

13160D

DRAWING NO.

AD.2



GENERAL NOTES

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR RELATED AND ADDITIONAL DEMOLITION AND PATCHING WORK BY MECHANICAL AND ELECTRICAL TRADES.
2. SEE EXTERIOR ELEVATIONS FOR ADDITIONAL DEMOLITION AND PATCHING WORK AT EXTERIOR OF BUILDING, INCLUDING (BUT NOT LIMITED TO) DEMOLITION NOTES RELATED TO LOUVER AND/OR DOOR REPLACEMENT.
3. WHERE REMOVAL OF CASEWORK, MILLWORK, CHALKBOARD, TACKBOARD, OR EQUIPMENT, IS INDICATED, FILL HOLES AND PATCH EXISTING WALLS, BASES AND CEILINGS WHICH ARE TO REMAIN EXPOSED.
4. UNLESS OTHERWISE INDICATED, TOOTH NEW MATERIAL INTO EXISTING WHEREVER INFILL REMAINS EXPOSED.
5. SEE SPECIFICATION SECTIONS 017329 AND 024119 FOR ADDITIONAL DEMOLITION AND PATCHING REQUIREMENTS.
6. REFER ALSO TO ARCHITECTURAL DETAILS FOR ADDITIONAL SELECTIVE DEMOLITION.
7. PROTECT IN PLACE ALL FIXTURES AND SURFACES SCHEDULED TO REMAIN.
8. COORDINATE EXTENT OF ALL DEMOLITION WITH REQUIREMENTS OF NEW EQUIPMENT AND MILLWORK INSTALLATIONS.

DEMOLITION KEYNOTES

1. REMOVE LOWER GLASS PANE AT DOOR AND REPLACE WITH 1/4" THICK ALUM. PANEL GL-13. ADD CONTINUOUS HINGE TO DOOR. PAINT DOOR AND FRAME.
2. REMOVE EXTERIOR ALUMINUM FRAMING SYSTEM, ALUMINUM DOORS, SIDELIGHTS, DOOR THRESHOLDS, AND DOOR HARDWARE.
3. REMOVE EXTERIOR HOLLOW METAL FRAMING, HOLLOW METAL DOORS, SIDELIGHTS, LOUVER, DOOR THRESHOLDS, AND DOOR HARDWARE.
4. REMOVE FIRE ALARM PULL STATION FROM WINDOW FRAMING. REINSTALL PULL STATION AFTER NEW WINDOW FRAMING IS INSTALLED

SALVAGED ITEMS

- DOOR HARDWARE - RETURN TO OWNER

N

DEMOLITION PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

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REGISTRATION SEAL

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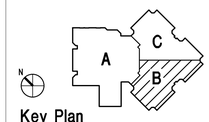
PROJECT TITLE

Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE

Demolition Plan - Zone 'B'



Key Plan

ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

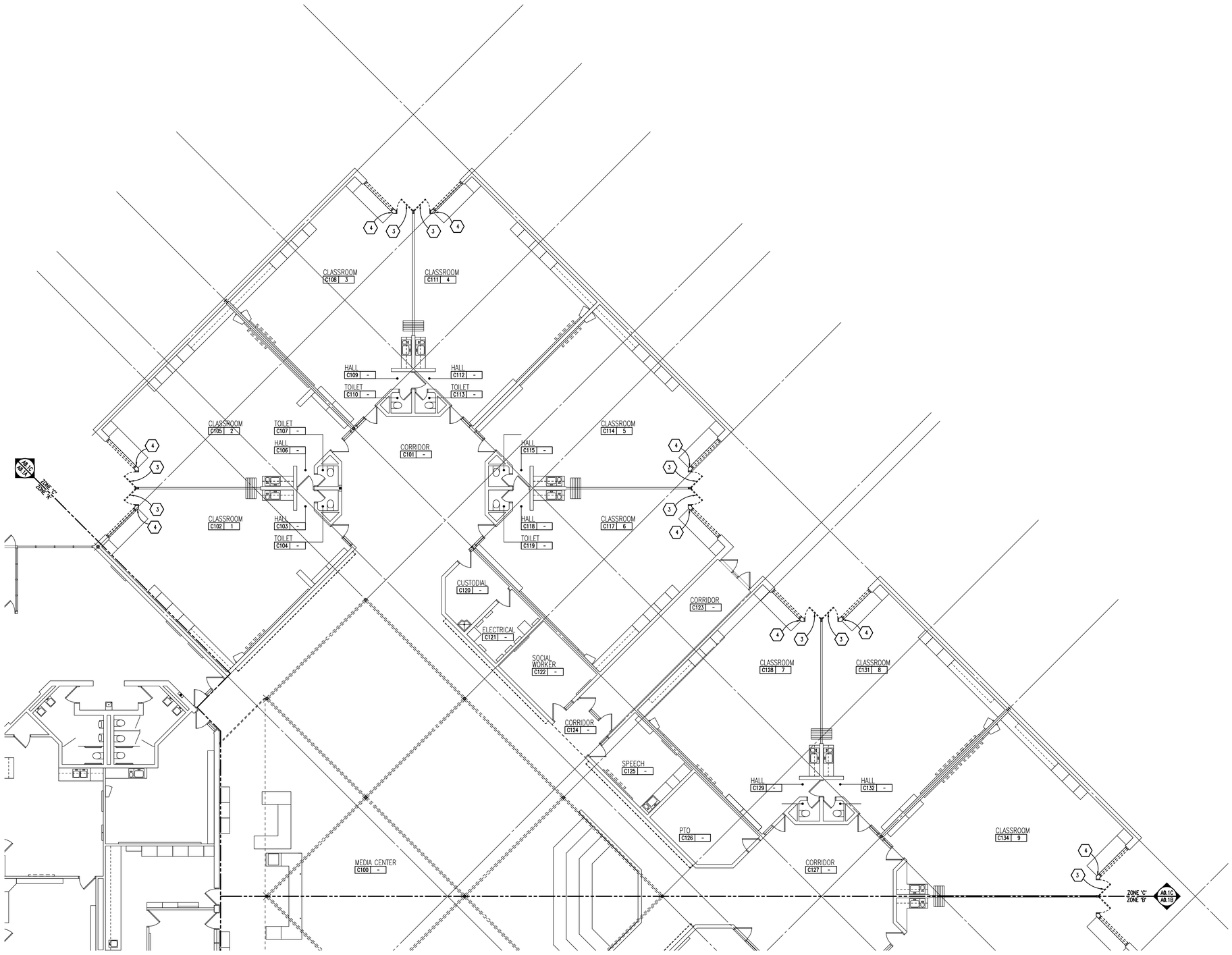
DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.

13160D

DRAWING NO.

A0.1B



DEMOLITION PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR RELATED AND ADDITIONAL DEMOLITION AND PATCHING WORK BY MECHANICAL AND ELECTRICAL TRADES.
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3. WHERE REMOVAL OF CASEWORK, MILLWORK, CHALKBOARD, TACKBOARD, OR EQUIPMENT, IS INDICATED. FILL HOLES AND PATCH EXISTING WALLS, BASES AND CEILINGS WHICH ARE TO REMAIN EXPOSED.
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3. REMOVE EXTERIOR HOLLOW METAL FRAMING, HOLLOW METAL DOORS, SIDELIGHTS, LOUVER, DOOR THRESHOLDS, AND DOOR HARDWARE.
4. REMOVE FIRE ALARM PULL STATION FROM WINDOW FRAMING. REINSTALL PULL STATION AFTER NEW WINDOW FRAMING IS INSTALLED

SALVAGED ITEMS

- DOOR HARDWARE - RETURN TO OWNER

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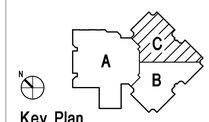
PROJECT TITLE

Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE
Demolition Plan - Zone 'C'



Key Plan

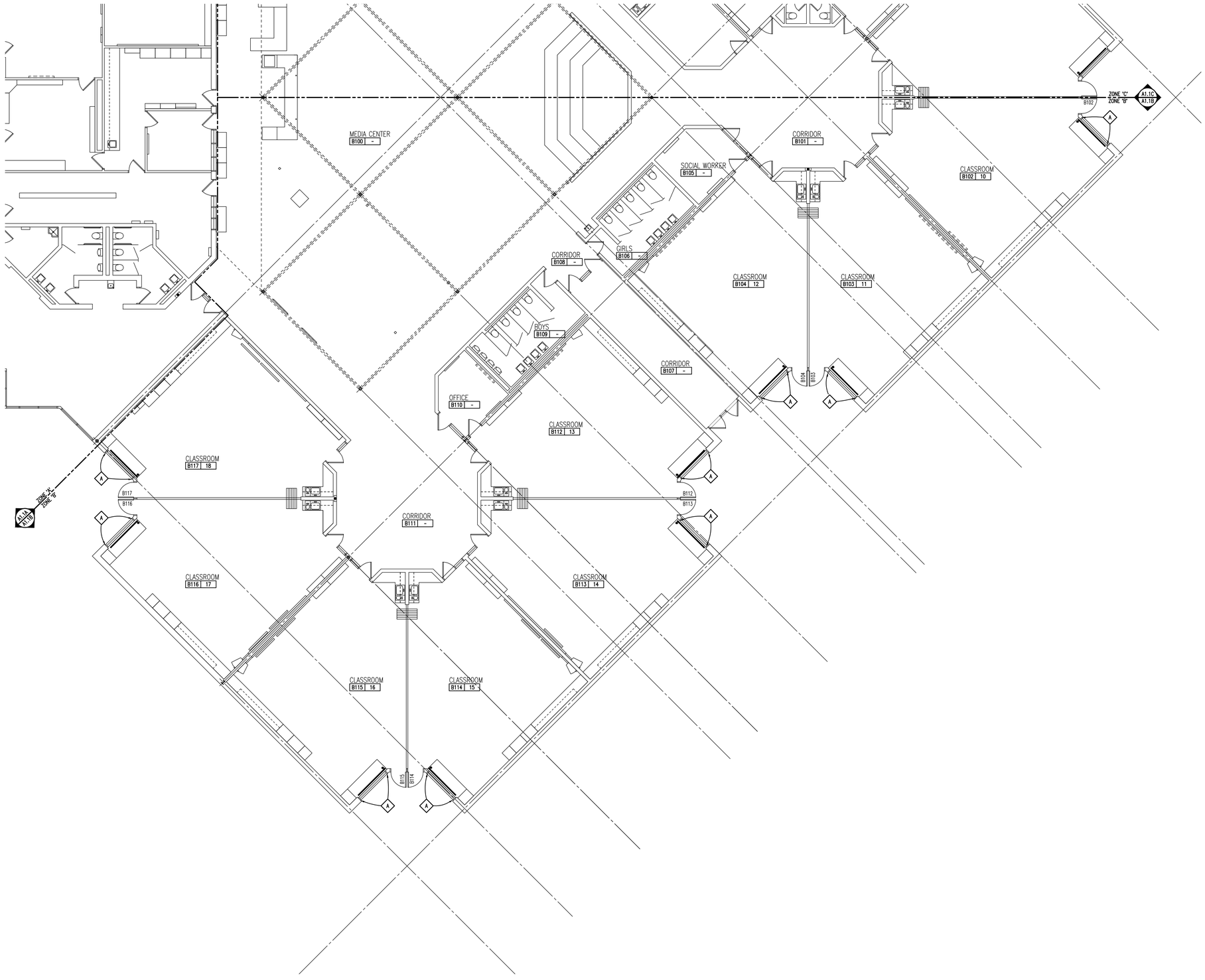
ISSUE DATES

12-16-2020	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13160D

DRAWING NO.
A0.1C



GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING PADS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER.
2. CONTRACTORS SHALL VERIFY ALL NEW EQUIPMENT/MILLWORK INSTALLATIONS WITH EXISTING FIELD CONDITIONS. COORDINATE WITH PROPOSED INSTALLATIONS AND NOTIFY THE ARCHITECT'S REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK.
3. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.
4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS WHERE NEW CONSTRUCTION OCCURS OR WHERE NEW CONSTRUCTION IS ADJACENT TO EXISTING CONSTRUCTION AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS TYPICAL. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
6. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS AND/OR DOCUMENTS. SHOP DRAWINGS SHALL BE REQUIRED THAT SHOW OPENINGS, NEW FRAMING MEMBERS, AND FIELD VERIFIED TIE-INS TO EXISTING STRUCTURAL FRAMING.
7. VERIFY ALL DIMENSIONS IN FIELD.
8. ALL CONCRETE FLOOR SLABS TO BE REMOVED SHALL BE SAWCUT TO PROVIDE A NEAT, CONTROL JOINT AT JUNCTURE OF NEW AND EXISTING CONCRETE FLOORS.
9. REFER TO THE COMPLETE SPECIFICATIONS FOR WORK REQUIRED TO COMPLETE CONSTRUCTION.
10. REFER TO MASONRY SPECIFICATION FOR VERTICAL REINFORCEMENT AND WALL BRACING NOT INDICATED ON DRAWINGS.

PATCHING NOTES

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2. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH ADJACENT SURFACES AS ACCEPTABLE TO ARCHITECT. PATCH AND REPAIR SHALL EXTEND TO THE NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN, NATURAL, UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
3. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.

WINDOW TREATMENT LEGEND

WINDOW TREATMENT
CONTROL MECHANISM LOCATION

A TYPE 'A' - MANUAL, 3% OPEN

N

FLOOR PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

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REGISTRATION SEAL

CONSULTANT

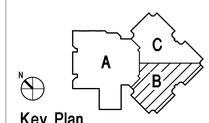
PROJECT TITLE

Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE

Floor Plan - Zone 'B'



Key Plan

ISSUE DATES

12-16-2020	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:

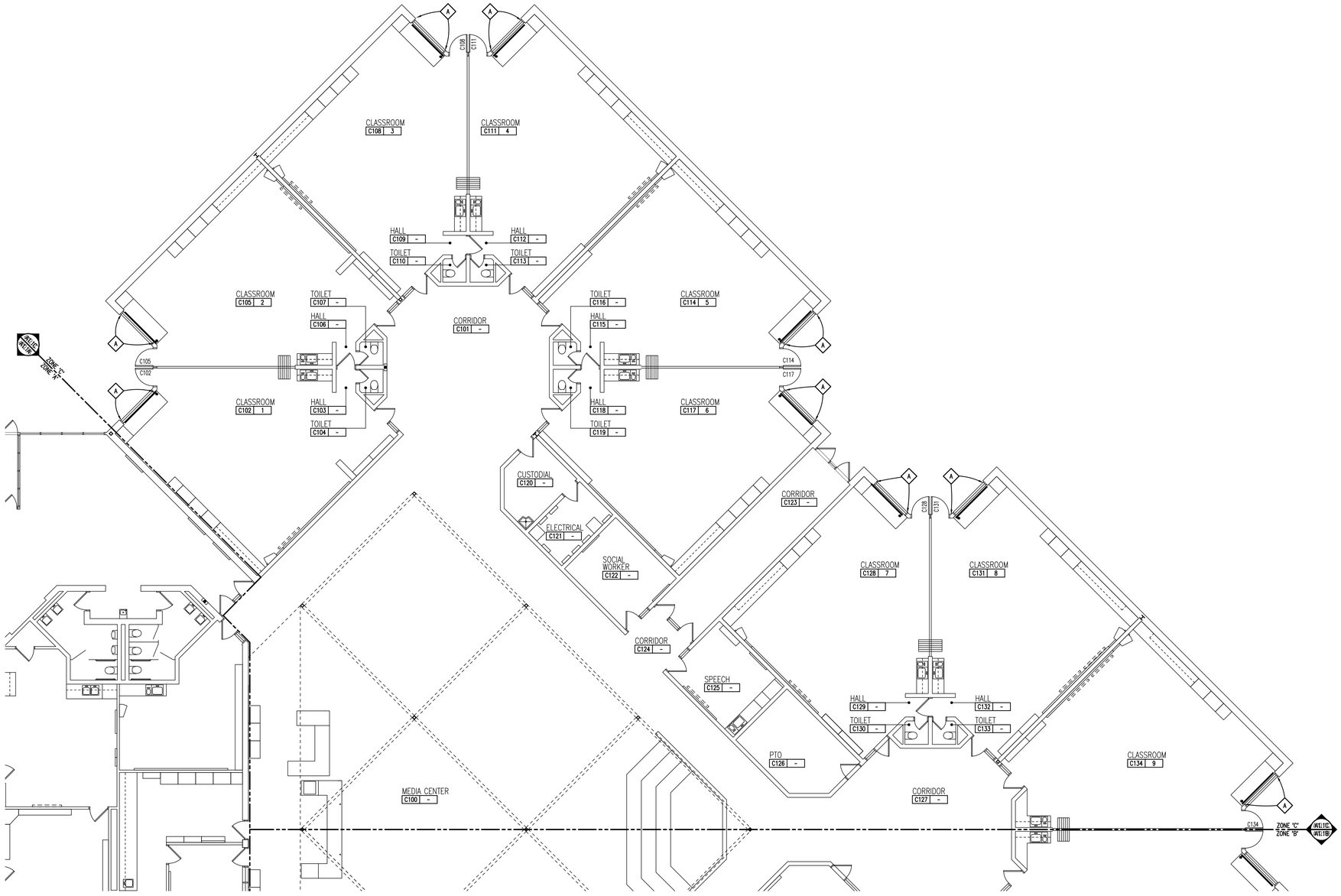
DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.

13160D

DRAWING NO.

A1.1B



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1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.
2. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH ADJACENT SURFACES AS ACCEPTABLE TO ARCHITECT. PATCH AND REPAIR SHALL EXTEND TO THE NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN, NATURAL, UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
3. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.

WINDOW TREATMENT LEGEND

WINDOW TREATMENT
CONTROL MECHANISM LOCATION

A TYPE 'A' - MANUAL, 3% OPEN

FLOOR PLAN - ZONE 'C'
SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS - MICHIGAN - 48302
PH - 248.338.4561 FX - 248.338.0223
EM - INFO @TMP-ARCHITECTURE.COM

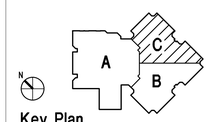
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Hamilton Elementary School Remodeling Bid Package No. 31

Troy School District
Troy, Michigan

DRAWING TITLE
Floor Plan - Zone 'C'



Key Plan

ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13160D

DRAWING NO.
A1.1C

ARCHITECTURE

TMP ARCHITECTURE INC
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Peter Basso Associates Inc
CONSULTING ENGINEERS
5145 Livernois, Suite 100
Troy, Michigan 48098-3276
Tel: 248-879-5666
Fax: 248-879-0007
www.PeterBassoAssociates.com

WASS ELEMENTARY SCHOOL REMODELING

TROY SCHOOL DISTRICT - TROY, MICHIGAN

2013 BOND PROGRAM - BID PACKAGE NO.31

PROJECT NUMBER: 13167E

CONSTRUCTION DOCUMENTS

CONSULTANTS:

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MECHANICAL ENGINEER

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CONSULTING ENGINEERS
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FAX: (248) 879-0007

LIST OF DRAWINGS

GENERAL INFORMATION

TS.1 COVER SHEET
TG.1 GENERAL INFORMATION

STRUCTURAL

ARCHITECTURAL

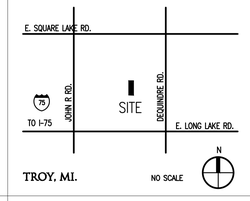
AC.1 FIRST LEVEL COMPOSITE PLAN
AD.1 DOOR & FRAME SCHEDULE
AD.2 DOOR / WINDOW DETAILS
A0.1A FIRST LEVEL DEMOLITION PLAN- ZONE A
A0.1B FIRST LEVEL DEMOLITION PLAN- ZONE B
A0.1C FIRST LEVEL DEMOLITION PLAN- ZONE C
A1.1A FIRST LEVEL FLOOR PLAN- ZONE A
A1.1B FIRST LEVEL FLOOR PLAN- ZONE B
A1.1C FIRST LEVEL FLOOR PLAN- ZONE C

MECHANICAL

ELECTRICAL

PROJECT DATA:

LOCATION MAP



TROY, MI. NO SCALE

ADDRESS: WASS ELEMENTARY SCHOOL
2340 WILLARD
TROY, MI 48098

BUILDING:

BUILDING AREA(S) = 64,450 SQ. FT. (EXISTING)

CODE:

GOVERNING CODES :

- 2016 SCHOOL FIRE SAFETY RULES
  (2012 Life Safety Code, plus amendments)
- 2015 MICHIGAN BUILDING CODE
- 2015 MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
- 2015 MICHIGAN PLUMBING CODE
- 2015 MICHIGAN MECHANICAL CODE
- 2015 MICHIGAN UNIFORM ENERGY CODE
  (ANSI/ASHRAE/IES Standard 90.1-2013)
- 2017 MICHIGAN ELECTRICAL CODE (2017 NEC, plus Part 8 Rules)
- 2010 MICHIGAN ELEVATOR RULES
  (ASME A17.1-2010, ASME A18.1-2011)
- MICHIGAN BARRIER FREE CODE
  (Michigan Building Code 2015 and ICC A117.1-2009)
- 2013 MICHIGAN BOILER CODE RULES
  (ASME Boiler and Pressure Vessel Code, 2010 edition, plus 2011a addenda)
  (National Board Inspection Code [NBIC], 2011 edition)

CONSTRUCTION CLASSIFICATION:: II-B(MBC)/11(000)NFPA
USE GROUP CLASSIFICATION:: E-EDUCATION

DATE	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

LICENSEE'S STATEMENT:

This Document has been prepared under the supervision of the Architect, as the person in Responsible Charge with the firm of TMP ARCHITECTURE, INC. An original embossed or rubber stamp seal and original signature of the Architect is required and shall be affixed to any copy of this Document submitted to a governmental agency for approval or record. This is in conformance with the State of Michigan's PA 299, Article 20 and the General Rules of the Board of Architects.

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REGISTRATION SEALS

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PROJECT TITLE
Wass Elementary Remodeling

PROJECT NO.
13167E

DRAWING NO.
TS.1

ABBREVIATIONS

A

ABV.	ABOVE
A.F.F.	ABOVE FINISH FLOOR
A.R.F.	ABOVE REFERENCE FLOOR
ABR.	ABRASIVE
ABS.	ABSORBING
ACC.	ACCESS
ACC. PNL	ACCESS PANEL
AC.	ACOUSTIC/ACOUSTICAL
ACT	ACOUSTIC TILE
AC. INSUL.	ACOUSTIC INSULATION
ADD.	ADDENDUM
ADDN.	ADDITION
ADDNL.	ADDITIONAL
ADH.	ADHESIVE
ADJ.	ADJUSTIBLE
AGGR.	AGGREGATE
A.C.B.	AIR CIRCUIT BREAKER
A/C	AIR CONDITIONING
A.C.C.	AIR CONDITIONING COMPRESSOR
A.C.U.	AIR CONDITIONING UNIT
A.H.U.	AIR HANDLING UNIT
ALT.	ALTERNATE
ALUM./AL	ALUMINUM
AMT	AMOUNT
AMP	AMPHERE
AMPL.	AMPLIFIER
ANCH.	ANCHOR
A.B.	ANCHOR BOLT
&	AND
ANG./ L or ∠	ANGLE
ANOD.	ANODIZED
APT.	APARTMENT
APPR.	APPROVED
APPROX.	APPROXIMATE
ARCH.	ARCHITECT/ARCHITECTURAL
A–	ARCHITECTURAL DRAWING–NO.
A.T.	ASH TRAY
ATM	AUTOMATIC TELLER MACHINE
ASPH.	ASPHALT
ASSY.	ASSEMBLY
@	AT
AUTO.	AUTOMATIC
A.S.R.	AUTOMATIC SPRINKLER RISER
AUX.	AUXILIARY
AVG.	AVERAGE

B

B/B	BACK–TO–BACK
B.F.P.	BACK FLOW PREVENTER
B.D.D.	BACK DRAFT DAMPER
B.F.	BARRIER FREE
B.B.R.	BASE BOARD RADIATION
B.PL	BASE PLATE
BSMT	BASEMENT
B.	BATH ROOM
BM	BEAM
B/C	BACK OF CURB
BRG	BEARING
B.R.	BEDROOM
B.M.	BENCH MARK
BT	BENT
BETW.	BETWEEN
BEV.	BEVEL
BIT.	BITUMINOUS
B.I.	BLACK–IRON
BLK	BLOCK
BLKG	BLOCKING
BD	BOARD
BLR	BOILER
BLR. F.	BOILER FEED
BLR. H.	BOILER HOUSE
BK. SH.	BOOK SHELVES
B.S.	BOTH SIDES
B.W.	BOTH WAYS
BOT.	BOTTOM
BOT. EL.	BOTTOM ELEVATION
BLVD	BOULEVARD
BDRY	BOUNDARY
BRKT	BRACKET
BR.	BRASS
BRKR	BREAKER
BRK	BRICK
BTU	BRITISH THERMAL UNIT
BRZ	BRONZE
BLDG.	BUILDING
B.L.	BUILDING LINE
B.U.R.	BUILT–UP ROOFING
B.N.	BULLNOSE
BLKD	BULKHEAD
BULL.	BULLETIN
B.A.	BURGLAR ALARM
BUZZ.	BUZZER

C

CAB.	CABINET
C.U.H.	CABINET UNIT HEATER
CAP.	CAPACITY
CPT	CARPET
C.R.S.	CARPET REDUCER STRIP
CSMT	CASMENT
CSWRK	CASEWORK
CSG	CASING
C.I.	CAST IRON
C.I.F.	CAST IRON FRAME
C.I.P.	CAST IRON PIPE/CAST–IN–PLACE
CSTG	CASTING
CAT. NO.	CATALOG NUMBER
C.B.	CATCH BASIN
CLG.	CEILING
C.D.	CEILING DIFFUSER
CLG. HT.	CEILING HEIGHT
CEM.	CEMENT
CEM. PLAS.	CEMENT PLASTER
CTR	CENTER
℄	CENTERLINE
C/C	CENTER–TO–CENTER
CER.	CERAMIC
C.T.	CERAMIC TILE
C.BD.	CHALKBOARD
CHAM.	CHAMFER
CHG.	CHANGE
CHAN. or [	CHANNEL
CHKD. PL.	CHECKERED PLATE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHD	CHORD
CIRCUM.	CIRCUMFERENCE
CIR.	CIRCLE/CIRCULAR
CIRC.	CIRCUIT
C.BR	CIRCUIT BREAKER
C–	CIVIL DRAWING–NO.
CL.	CLASS
CLRM	CLASSROOM
C.O.	CLEAN OUT
CLR	CLEAR
CLR GL	CLEAR GLASS
CLR W.GL	CLEAR WIRE GLASS
CL.	CLOSET
CLO.	CLOSURE
C.CL.	COAT CLOSET
COEF.	COEFFICIENT
CW	COLD WATER
COL.	COLUMN
CO.	COMPANY
COMPT.	COMPARTMENT
COMPO.	COMPOSITION
CA	COMPRESSED AIR
COMPR.	COMPRESSOR
CONC.	CONCRETE
C.M.U.	CONCRETE MASONRY UNIT
CWR	CONDENSING WATER RETURN
CWS	CONDENSING WATER SUPPLY
COND.	CONDUIT
CONF.	CONFERENCE
CONN.	CONNECT
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
CRS.	COURSE
COV.	COVER
COV. PL.	COVER PLATE
C.C.T.	CUBICAL CURTAIN TRACK
CU.FT.	CUBIC FEET/ CUBIC FOOT
CFM	CUBIC FEET PER MINUTE
CY	CUBIC YARD
CULV.	CULVERT
C.D.	CUP DISPENSER
CYL.	CYLINDER
CYC.	CYCLES

D

DMPR	DAMPER
DMPFG	DAMPPROOFING
D.L.	DEAD LOAD
DB	DECIBLE
D.	DEEP
DWG.	DRAWING
DMT. PARTN	DEMOUNTABLE PARTITION
DEPT.	DEPARTMENT
DEPR.	DEPRESSED
DES.	DESIGN
DET.	DETAIL
D.E. CO.	DETROIT EDISON COMPANY
DIAG.	DIAGONAL
DGM	DIAGRAM
DIA.	DIAMETER
DIFF.	DIFFUSER
DIM.	DIMENSION
D.R.	DINING ROOM
DIR.	DIRECTORY
DISC.	DISCONNECT
DISCONT.	DISCONTINUOUS
DW	DISHWASHER
DISP.	DISPENSER
DIST.	DISTANCE
D.P.	DISTRIBUTION PANEL
DO	DITTO (DO OVER)
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
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
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
ELAST.	ELASTOMERIC
ELAST. FLASH.	ELASTOMERIC FLASHING
ELAST. W.P.	ELASTOMERIC WATERPROOFING
E.S.R.	ELASTOMERIC SHEET ROOFING
ELEC.	ELECTRIC/ELECTRICAL
ELEC. CL.	ELECTRICAL CLOSET
ELEC. CAB.	ELECTRICAL CABINET
E.C.	ELECTRICAL CONTRACTOR
E–	ELECTRICAL DRAWING–NO.
E.P.	ELECTRICAL PANEL
EWC	ELECTRIC WATER COOLER
ELEC. OPER.	ELECTRICALLY OPERATED
EL.	ELEVATION
ELEV.	ELEVATOR
EMERG.	EMERGENCY
ENCL.	ENCLOSURE
ENGR	ENGINEER
E/E	END–TO–END
ENTR.	ENTRANCE/ENTRY
EP.	EPOXY
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
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.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
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 or '	FEET/FOOT
FPM	FEET PER MINUTE
FN	FENCE
F.BD.	FORM BOARD
FIG.	FIGURE
FIN.	FINISH/FINISHED
FIN. FLR/F.F.	FINISH FLOOR
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
F.R.T.WD	FIRE RETARDANT TREATED WOOD
F.V.C.	FIRE VALVE CABINET
FP.	FIREPLACE
FPRFG.	FIREPROOFING
FIXT.	FIXTURE
FLASH.	FLASHING
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLAT HEAD WOOD SCREW
F.C.	FLEXIBLE CONNECTION
FLR	FLOOR
F.C.O.	FLOOR CLEAN OUT
F.D.	FLOOR DRAIN
FLR. FIN.	FLOOR FINISH
FLUOR.	FLUORESCENT
FLDG	FOLDING
FTG	FOOTING
FM. BD	FORMBOARD
FDN	FOUNDATION
FR.	FRAME
FR/COV.	FRAME AND COVER
FRMG	FRAMING
FRZR	FREEZER
F.S.	FULL SIZE
FURN.	FURNISH/FURNISHED
FURR.	FURRING/FURRED
FUT.	FUTURE

G

GA.	GAUGE
GAL.	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GALV.	GALVANIZED
GALV. I.	GALVANIZED IRON
G	GAS
GSKT	GASKET
G.V.& B.	GATE VALVE AND BOX
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.I.	GROUND FAULT INTERRUPTOR
GT	GROUT
G.	GUTTER ELEVATION
GYP.	GYPSUM
GYP.BD.	GYPSUM BOARD

H

HNDCP	HANDICAPPED
H.R.	HANDRAIL
H.BD	HARDBOARD
HDWE	HARDWARE
HDWD	HARDWOOD
HD	HEAD
HDR	HEADER
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
HHWR	HEATING HOT WATER SUPPLY
HHWS	HEATING HOT WATER RETURN
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
HNYCB	HONEYCOMB
HK	HOOK
HORIZ.	HORIZONTAL
HP	HORSEPOWER
H.B.	HOSE BIBB
H.S.P.	HOSE STAND PIPE
H.V.C.	HOSE VALVE CABINET
HOSP.	HOSPITAL
H.W.	HOT WATER
HWR	HOT WATER RETURN
HWS	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
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
KVA	KILOVOLT AMPHERE
KW	KILOWATT
K	KIP (1000#)
KIT.	KITCHEN
K.S.	KNEE SPACE
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–NO.
LGE	LARGE
LDRY	LAUNDRY
LAV.	LAVATORY
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
LTWT. CONC.	LIGHTWEIGHT CONCRETE
LMS	LIMESTONE
LTL	LINTEL
LIN. DIFF.	LINEAR DIFFUSER
L.F.	LINEAR FEET/FOOT
LIQ	LIQUID
LPG	LIQUID PROPANE GAS
L.P.G.	LIQUID PETROLEUM GAS
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. or #	POUNDS

M

MACH.	MACHINE
M.B.	MACHINE BOLT
MACH. RM	MACHINE ROOM
M.A.U.	MAKE–UP AIR UNIT
M.D.P.	MAIN DISTRIBUTION PANEL
M.S.B.	MAIN SWITCH BOARD
MAINT.	MAINTENANCE
MH.	MANHOLE
MFR	MANUFACTURER
MAR.	MARBLE
MK	MARK
MAS.	MASONRY
M.O.	MASONRY OPENING
MATL	MATERIAL
MAX.	MAXIMUM
MECH.	MECHANICAL
M–	MECHANICAL DRAWING–NO.
M.C.	MEDICINE CABINET
MED.	MEDIUM
MEMB.	MEMBRANE
MET.	METAL
M.D.S.	METAL DIVIDER STRIP
M.E.S.	METAL EDGE STRIP
M.L.	METAL LATH
M.L.& PLAS.	METAL LATH AND PLASTER
M.T.	METAL THRESHOLD
MET. W.P.	METALLIC WATERPROOFING
MEZZ.	MEZZANINE
MDOT	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.D.	MOTOR OPERATED DAMPER
MLDG	MOULDING
MTD	MOUNTED
MTG	MEETING/MOUNTING
MOV.	MOVEABLE
MOV. PARTN.	MOVEABLE PARTITION
MULL	MULLION
M	THOUSAND (1000)

N

NAT.	NATURAL
N.S.	NEAR SIDE
NEUT.	NEUTRAL
NRC	NOISE REDUCTION COEFFICIENT
NOM.	NOMINAL
NOR.	NORMAL
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
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
O.A.	OVERALL
OHD	OVERHEAD
OHD.DR	OVERHEAD DOOR
OXY.	OXYGEN

P

PTD	PAINTED
PR	PAIR
PG.	PAGE
PNL	PANEL
P.T.D.	PAPER TOWEL DISPENSER
P.T.W.R.	PAPER TOWEL WASTE RECEPTACLE
PRL	PARALLEL
PKG	PARKING
P.BD	PARTICLE BOARD
PRTN	PARTITION
PASS.	PASSAGE
PAT.	PATENT
PVMT	PAVEMENT
PVG	PAVING
PED.	PEDESTAL
PERF.	PERFORATED
PERIM.	PERIMETER
PERM.	PERMANENT
PERP.	PERPENDICULAR
P. or ϕ	PHASE
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
PLWD	PLYWOOD
PT	POINT
P.T.	POINT OF TANGENCY
P.C.	POINT OF CURVATURE
POL.	POLISH/POLISHED
PVC	POLYVINYLCLORIDE
PORC.	PORCELAIN
PORC. ENAM.	PORCELAIN ENAMEL
POR.	POROUS
PORT.	PORTABLE
POS.	POSITION
P.I.V.	POST INDICATOR VALVE
PLF	POUNDS PER LINEAR FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PCF	POUNDS PER CUBIC FOOT
P.P	POWER PANEL
P/C	PRECAST
P.T.R.	PRECAST TERRAZZO RECEPTOR
PREFAB.	PREFABRICATED
PFN.	PREFINISHED
P.T.WD	PRESERVATIVE TREATED WOOD
P.G.	PRESSURE GAUGE
P.R.V.	PRESSURE REDUCING VALVE
PRIM.	PRIMARY
PROJ.	PROJECT/PROJECTION
PROP.	PROPERTY/PROPOSED
P.L.	PROPERTY LINE
P.A.	PUBLIC ADDRESS
P.S.	PURSE SHELF
P.B.	PUSH BUTTON

Q

QTY	QUANTITY
Q.T.	QUARRY TILE
QTR	QUARTER
QTR. RD	QUARTER ROUND

R

RBT	RABBET
RAD. or R.	RADIUS
R.W.C.	RAIN WATER CONDUCTOR
R.R.	RAILROAD
RECV.	RECEIVE/RECEIVING
RECPT.	RECEPTACLE
R.P.	RECEPTACLE PANEL
REC.	RECESS
RECT.	RECTANGLE/RECTANGULAR
RED.	REDUCER
RWD	REDWOOD
REF.	REFER/REFERENCE
REFL.	REFLECTED/REFLECTIVE
REFR.	REFRIGERATOR
REG.	REGISTER
REINF.	REINFORCE/REINFORCING/ REINFORCEMENT
REM.	REMOVE/REMOVABLE
REP.	REPAIR
REQ'D.	REQUIRED
RESIL.	RESILIENT
RET.	RETURN
R.A.	RETURN AIR
R.A.D.	RETURN AIR DIFFUSER
R.A.F.	RETURN AIR FAN
REV.	REVISED/REVISION
RPM	REVOLUTIONS PER MINUTE
R.	RISER
R.H.	RIGHT HAND
R.H.R.B.	RIGHT HAND REVERSE BEVEL
R.O.W.	RIGHT OF WAY
RVT	RIVET
RD	ROAD
R.S.C.	ROLLING STEEL CURTAIN
RF	ROOF
R.C.	ROOF CONDUCTOR
R.D.	ROOF DRAIN
RF.H.	ROOF HATCH
R.S.	ROOF SUMP
R.V.	ROOF VENTILATOR
RFG	ROOFING
R.T.U.	ROOF TOP UNIT
RM	ROOM
R.O.	ROUGH OPENING
RND or ϕ	ROUND
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
R.T.	RUBBER TILE

S

SAN.	SANITARY
S.N.D.	SANITARY NAPKIN DISPENSER
S.N.R.	SANITARY NAPKIN RECEPTACLE
SCHED.	SCHEDULE
SCN	SCREEN
STG	SEATING
SECT.	SECTION
SERV.	SERVICE
S.S.	SERVICE SINK
SHTHG	SHEATHING
SHT	SHEET
SHT. MET.	SHEET METAL
SH.& R.	SHELF AND ROD
SHWR	SHOWER
S.C.R.	SHOWER CURTAIN ROD
S.DR	SHOWER DOOR
S.W.	SIDEWALK
SIM.	SIMILAR
SGL.	SINGLE
SK	SINK
S.D.	SOAP DISPENSER
S.C.	SOLID CORE
STC	SOUND TRANSMISSION CLASS
S	SOUTH
SP.	SPACE
SPR.	SPARE
SPKR	SPEAKER
SPEC.	SPECIFICATIONS
S.D.	SPLITTER DAMPER
SPRYD	SPRAYED
SPKLR	SPRINKLER
SQ.	SQUARE
S.F.	SQUARE FEET/SQUARE FOOT
STAG.	STAGGERED
ST.STL	STAINLESS STEEL
STD	STANDARD
SP.	STANDPIPE
S.P.	STATIC PRESSURE
STA.	STATION
STM	STEAM
STL	STEEL
STL. PL.	STEEL PLATE
STIFF.	STIFFENER
STO. FR.	STOREFRONT
STOR.	STORAGE
STR.	STRAIGHT
ST.	STREET
STRUCT.	STRUCTURAL
S–	STRUCTURAL DRAWING–NO.
S.G.F.T.	STRUCTURAL GLAZED FACING TILE
S.STL	STRUCTURAL STEEL
SS.D.	SUBSOIL DRAIN
SS.D.C.	SUBSOIL DRAIN CONNECTION
SUB.	SUBSTATION
S.A.G.	SUPPLY AIR GRILLE
S.D.	SUPPLY DIFFUSER/ DUCT
SUBST.	SUSTITUTE
S.A.R.	SUPPLY AIR REGISTER
S.F.	SUPPLY FAN

S

SW.	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMBOL/ SYMMETRICAL
SYS.	SYSTEM
SUPP.	SUPPORT
SURF.	SURFACE/ SURFACING
SUSP.	SUSPEND/ SUSPENSION

T

T.BD	TACKBOARD
TAN.	TANGENT
TECH.	TECHNICAL
TEL.	TELEPHONE
TEL. CAB.	TELEPHONE CABINET
TV	TELEVISION
TV.M	TELEVISION MONITOR
TEMP.	TEMPERATURE
TEMP. GL.	TEMPERED GLASS
T.U.	TERMINAL UNIT
TERR.	TERRAZZO
T.B.	TEST BORING
T.	THERMOSTAT
THK	THICK/ THICKNESS
T.S.	THICKENED SLAB
THD	THREAD
THRESH.	THRESHOLD
THRU	THROUGH
T.	TILE
T./ TOIL.	TOILET
T.P.D.	TOILET PAPER DISPENSER
T.P.H.	TOLET PAPER HOLDER
T & G	TONGUE AND GROOVE
T & B	TOP AND BOTTOM
T/C	TOP OF CURB
T/EL.	TOP ELEVATION
T/F	TOP OF FOOTING
T/G	TOP OF GUTTER
T/M	TOP OF MASONRY
T/P	TOP OF PARAPET
T/P	TOP OF PAVEMENT
T/R	TOP OF RIM
T/S	TOP OF STEEL
T/W	TOP OF WALL
T.B.	TOWEL BAR
T.D.	TOWEL DISPENSER
TD & WR	TOWEL DISPENSER AND WASTE RECEPTACLE
T.G.	TRANSFER GRILLE
TRFR	TRANSFORMER
TRAN.	TRANSOM
T	TREAD
T.D.	TRENCH DRAIN
TS	TUBE SECTION
T.V.	TURNING VANE
T.T.	TWIN TEE
TYP.	TYPICAL

U

U.C.	UNDERCUT
U.G.	UNDER GROUND
UL	UNDERWRITER'S LABORATORY
ULT.	ULTIMATE
UNFIN.	UNFINISHED
U.H.	UNIT HEATER
U.SUB.	UNIT SUBSTATION
U.V.	UNIT VENTILATOR
USGS	UNITED STATES GEOLOGICAL SURVEY
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL

V

VAC.	VACUUM
V.B.	VACUUM BREAKER
V.C.O.	VACUUM CLEANER OUTLET
V. BARR.	VAPOR BARRIER
VAR.	VARIABLE
VARN.	VARNISH
VNR	VENEER
V. PLAS.	VENEER PLASTER
V.	VENT
VTR	VENT THRU ROOF
VENT.	VENTILATE/ VENTILATION
V.I.F.	VERIFY IN FIELD
VS.	VERSUS
VERT.	VERTICAL/ VERTICALLY
VERT. C.	VERTICAL CURVE
VEST.	VESTIBULE
V.I.	VIBRATION ISOLATOR
VNY	VINYL
VCT	VINYL COMPOSITION TILE
VIN. FAB.	VINYL FABRIC
V.R.S.	VINYL REDUCER STRIP
VIT.	VITREOUS
VCP	VITRIFIED CLAY PIPE
VOL.	VOLUME
V.D.	VOLUME DAMPER
V	VOLTS

W

WAINS.	WAINSCOT
W.CAB.	WALL CABINET
W.C.O.	WALL CLEAN OUT
W.H.	WALL HYDRANT
W/W	WALL–TO–WALL
W.V.	WALL VENT
WHSE	WAREHOUSE
W.F.	WASH FOUNTAIN
W.	WASTE/ WATTS
W & V	WASTE AND VENT
W.R.	WASTE RECEPTACLE
W.C.	WATER CLOSET
W.G.	WATER GAUGE
W.H.	WATER HEATER
WP	WATERPROOFING
W.PRFG.	WEATHERPROOFING
W.STPG.	WEATHERSTRIPPING
WT.	WEIGHT
W.W.F.	WELDED WIRE FABRIC
W	WEST
W.B.	WET BULB
W.	WIDE/ WIDTH
W_x_	WIDE FLANGE SECTION
WT	WIDE FLANGE TEE SECTION
W.O.	WINDOW OPENING
W.GL.	WIRE GLASS
W.M.	WIRE MESH
w/	WITH
w/o	WITHOUT
WD	WOOD
W.L.	WORK LINE
W.P.	WORK POINT
W.I.	WROUGHT IRON

X

Y

YD	YARD
Y.P.	YIELD POINT
Y.S.	YIELD STRENGTH
YR	YEAR

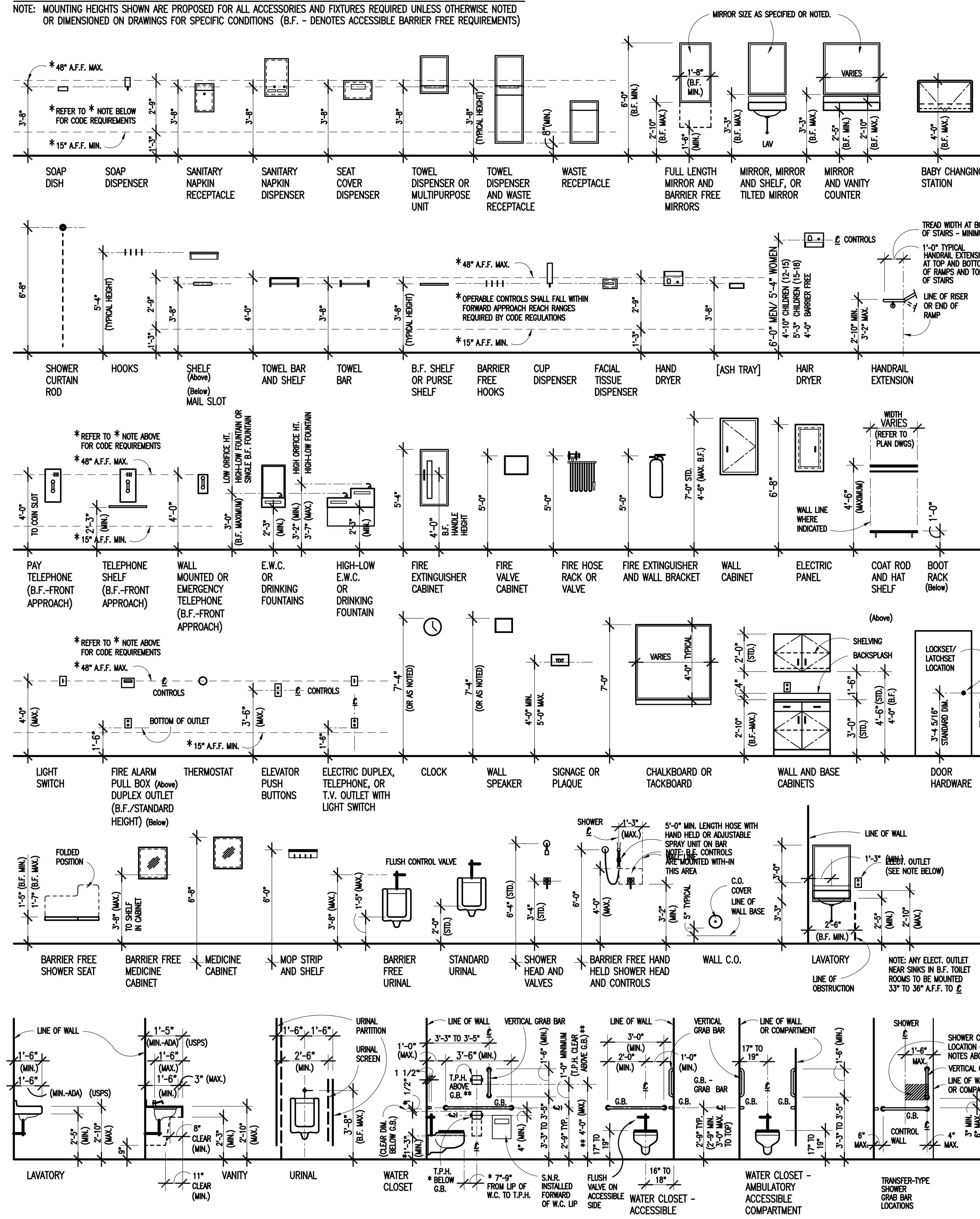
Z

ZC	ZINC

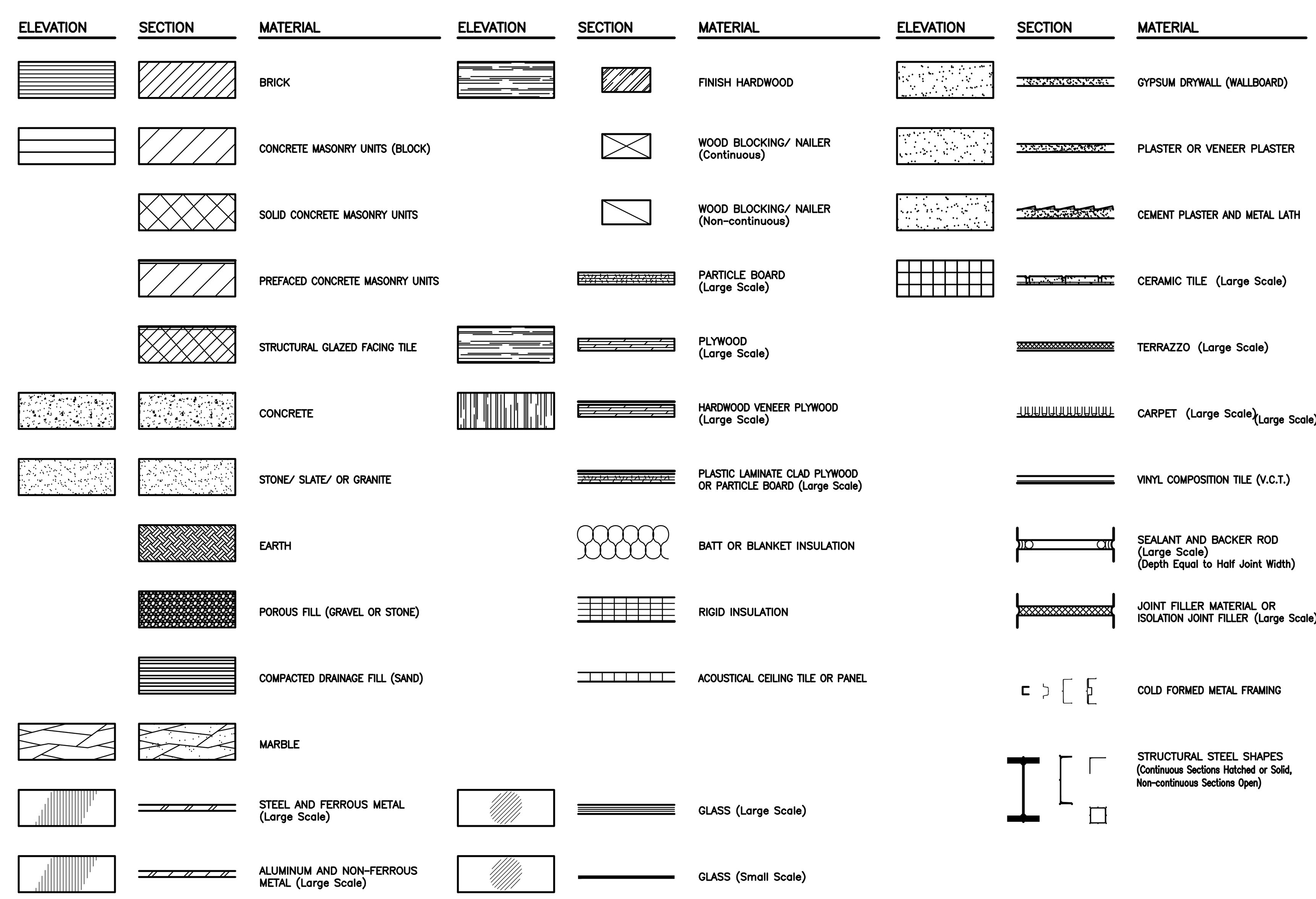
TYPICAL MOUNTING HEIGHTS

MISCELLANEOUS ACCESSORIES, TOILET ACCESSORIES AND FIXTURES

NOTE: MOUNTING HEIGHTS SHOWN ARE PROPOSED FOR ALL ACCESSORIES AND FIXTURES REQUIRED UNLESS OTHERWISE NOTED OR DIMENSIONED ON DRAWINGS FOR SPECIFIC CONDITIONS (B.F. – DENOTES ACCESSIBLE BARRIER FREE REQUIREMENTS)



MATERIAL DESIGNATIONS



REFERENCE SYMBOLS

DETAIL IDENTIFICATION

DETAIL IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1. / A1.1 — DETAIL TITLE

SCALE: 1/8" = 1'–0"

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE DETAIL IS DRAWN)

DETAIL LOCATION INDICATION

DETAIL IDENTIFICATION NUMBER

(WALL SECTIONS) (PLAN SECTIONS)

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN)

DETAIL LOCATION INDICATION FOR ENLARGED PLANS

DETAIL IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN)

SECTION IDENTIFICATION

SECTION IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1. / A1.1 — SECTION TITLE

SCALE: 1/8" = 1'–0"

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE SECTION IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE SECTION IS DRAWN)

SECTION LOCATION INDICATION

SECTION IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE SECTION IS DRAWN)

ELEVATION IDENTIFICATION

ELEVATION IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1. / A1.1 — ELEVATION TITLE

SCALE: 1/8" = 1'–0"

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE ELEVATION IS DRAWN)

ELEVATION INDICATION

ELEVATION IDENTIFICATION NUMBER(S) (SAME LETTER ON SHEET WHERE DRAWN OR REFERENCED)

INDICATES DIRECTION OF VIEW OR MULTIPLE VIEWS

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN)

MATCH LINE INDICATION

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER OF DRAWING)

ZONE 'A' / ZONE 'B' — ZONE 'A' / ZONE 'B'

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DRAWING IS CONTINUED)

DOOR INDICATION

DOOR SWING INDICATION– NEW DOOR

DOOR SWING INDICATION– EXISTING DOOR

DOOR SWING INDICATION– EXISTING DOOR TO BE REMOVED

ROOM NAME AND NUMBER INDICATION

SAMPLE ROOM NAME

A100 | –

OWNER ROOM NUMBER

CONTRACT DOCUMENT ROOM NUMBER

ROOM IDENTIFICATION BY FLOOR AND/OR ZONE SHALL BE AS FOLLOWS:

BASEMENT DOORS ·········· 001 — ZONE A ··· A101
FIRST FLOOR DOORS ······· 101 — ZONE B ··· B101
SECOND FLOOR DOORS ··· 201 — ZONE C ··· C101
THIRD FLOOR DOORS ······· 301

CONTINUES FOR AS MANY FLOORS REQUIRED.

DOOR IDENTIFICATION

DOOR TO ROOM SHALL REPEAT ROOM NUMBER ASSIGNED TO ROOM. MULTIPLE DOORS TO ROOM SHALL REPEAT ROOM NUMBER WITH A POSTSCRIPT LETTER FOR EACH ADDITIONAL DOOR REQUIRED.

101 / 101A / 101B FOR NUMBER NEEDED

DOOR IDENTIFICATION BY FLOOR AND/OR ZONE SHALL BE AS FOLLOWS:

BASEMENT DOORS ·········· 001 — ZONE A ··A101
FIRST FLOOR DOORS ······· 101 — ZONE B ··B101
SECOND FLOOR DOORS ··· 201 — ZONE C ··C101
THIRD FLOOR DOORS ······· 301

CONTINUES FOR AS MANY FLOORS REQUIRED.

COLUMN INDICATION

COLUMN IDENTIFICATION LETTER OR NUMBER FOR NEW CONSTRUCTION

COLUMN IDENTIFICATION LETTER OR NUMBER FOR EXISTING CONSTRUCTION

NORTH INDICATION

ASSUMED NORTH IF NOT TRUE NORTH OR PLAN NORTH WHERE TRUE NORTH IS INDICATED BY ARROW NOTATION

N — TRUE NORTH

WALL TYPE NOTATION

WALL CONSTRUCTION TYPE NUMBER AS LISTED IN 'WALL TYPE LEGEND'

DESCRIPTION ORIGINATES AT WALL SURFACE DESIGNATED

CASEWORK NOTATION

CASEWORK IDENTIFICATION NUMBER BASED ON MANUFACTURERS CATALOG NUMBERS AS NOTED IN SPECIFICATIONS OR 'CASEWORK LEGEND'

A1–100–36

KEYED NOTE INDICATION

KEYED NOTE IDENTIFICATION NUMBER AS LISTED IN 'NOTES' LEGEND.

(PLAN NOTATION)

KEYED NOTE IDENTIFICATION NUMBER AS LISTED IN 'NOTES' LEGEND.

(DEMOLITION NOTATION)

ADDENDUM INDICATION

ADDENDUM NUMBER

(CURRENT REVISIONS SHALL BE SHOWN ENCIRCLED BY A FREEFORM LINE)

BULLETIN INDICATION

BULLETIN NUMBER

(CURRENT REVISIONS SHALL BE SHOWN ENCIRCLED BY A FREEFORM LINE)

STAIR DIRECTION NOTATION

10 T. (11 R.) — UP (DN)

STAIR DIRECTION TO FLOOR ABOVE (UP) OR BELOW (DOWN)

NUMBER OF TREADS (OR RISERS) IN STAIR RUN

DRAWING DIMENSION LINE INDICATION

10'–0"

NOTE: DO NOT SCALE DRAWINGS WITHOUT GRAPHIC SCALES WITH PROPORTIONS OTHER THAN 1:1

MATERIAL OR WORK DIVISION NOTATION

MATERIAL 'A' (NEW CONST.) | MATERIAL 'B' (EXIST. CONST.)

JOINT BETWEEN MATERIALS (OR CONSTRUCTION WORK DIVISION LINE)

DRAWING NOTATION INDICATION

MATERIAL NOTATION AND INFORMATION (REFER TO TECHNICAL SPECIFICATIONS FOR MATERIAL DESCRIPTIONS AND METHODS OF CONSTRUCTION)

ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS · MICHIGAN · 48302
PH · 248.338.4561 FX · 248.338.0223
EM · INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE

General Information

ISSUE DATES

DATE:	ISSUED FOR:
12–16–2020	CONSTRUCTION DOCUMENTS

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.

13167E

DRAWING NO.

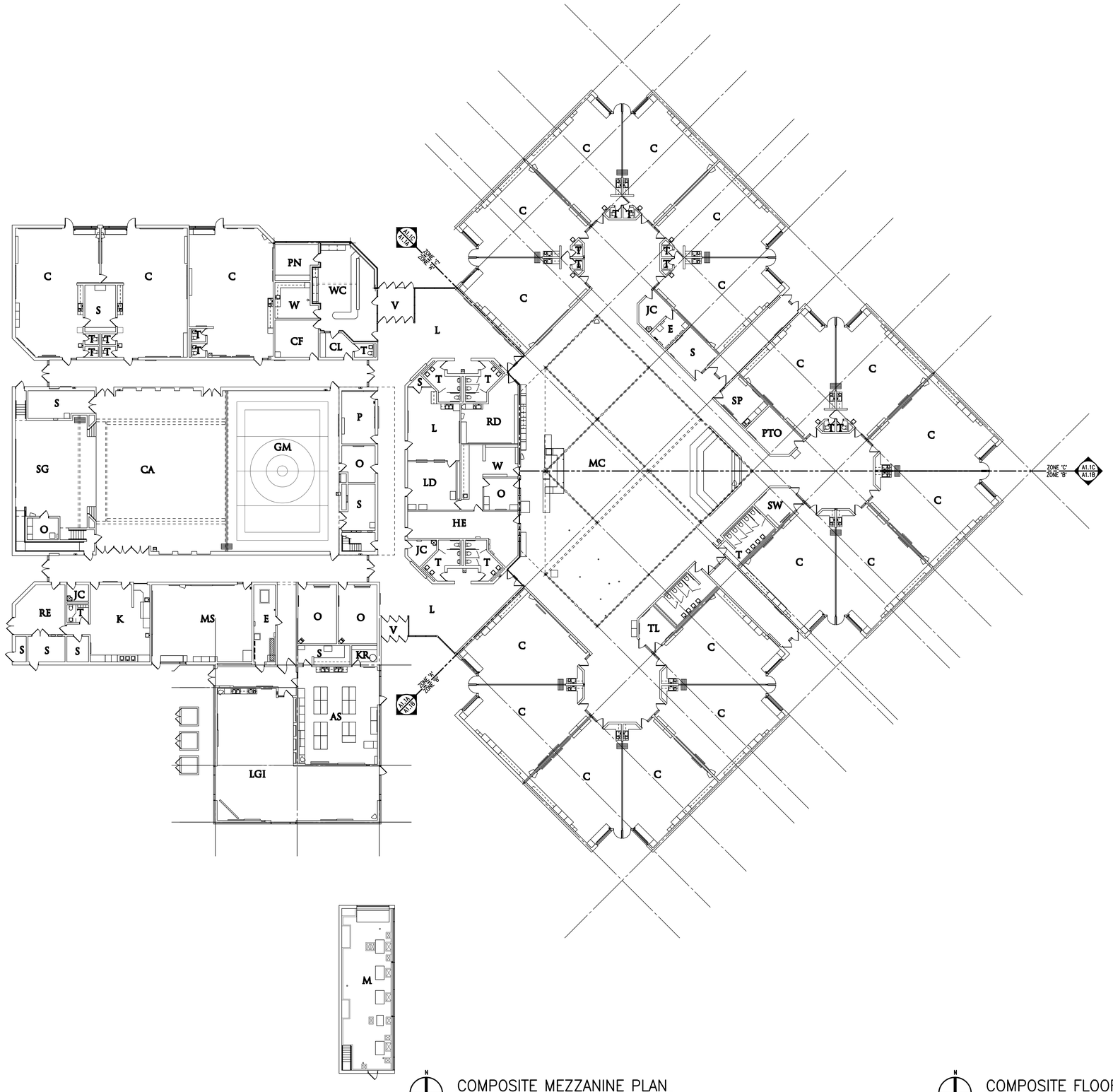
TG.1

ROOM USE LEGEND

AS	ART STUDIO	O	OFFICE
C	CLASSROOM	PN	PRINCIPAL
CA	CAFETERIA	PTO	PTO
CF	CONFERENCE ROOM	RD	READING
CL	CLINIC	RE	RECEIVING
E	ELECTRICAL	S	STORAGE
GM	GYMNASIUM	SG	STAGE
HE	HEAD END	SP	SPEECH
K	KITCHEN	SW	SOCIAL WORKER
KR	KILN ROOM	T	TOILET
JC	JANITOR'S CLOSET	TL	TITLE 1
L	LOBBY	V	VESTIBULE
LD	LEARNING DEPARTMENT	W	WORKROOM
LG	LOUNGE	WC	WELCOME CENTER
LGI	LARGE GROUP INSTRUCTION		
M	MECHANICAL		
MS	MUSIC		
MC	MEDIA CENTER		

BUILDING DATA

1. NO SUPERVISED AUTOMATIC SPRINKLER SYSTEM
2. CONSTRUCTION CLASSIFICATION TYPE II-000 (NFPA) & II-B (MBC)
3. USE CLASSIFICATION "E"



COMPOSITE MEZZANINE PLAN
SCALE: 1/16" = 1'-0"

COMPOSITE FLOOR PLAN
SCALE: 1/16" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS - MICHIGAN - 48302
PH - 248.338.4561 FX - 248.338.0223
EM - INFO @TMP-ARCHITECTURE.COM

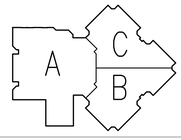
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Composite Floor Plan
Composite Mezzanine Plan



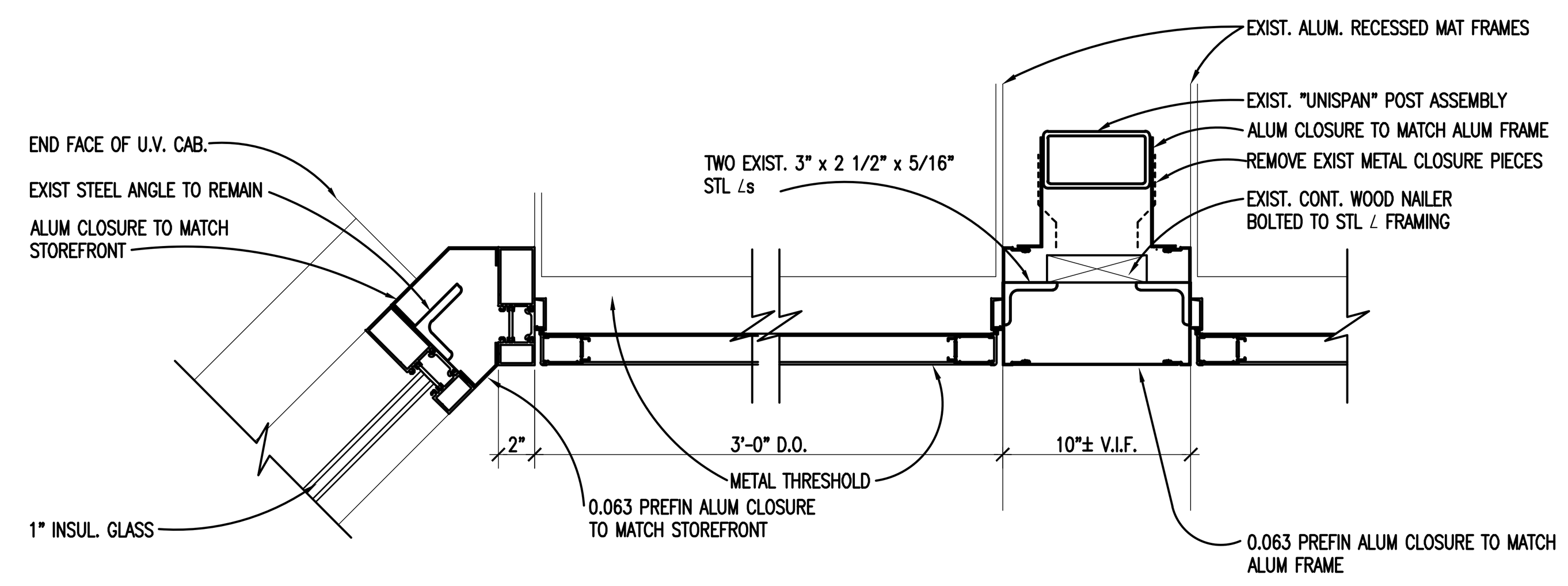
ISSUE DATES

12-16-2020	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:

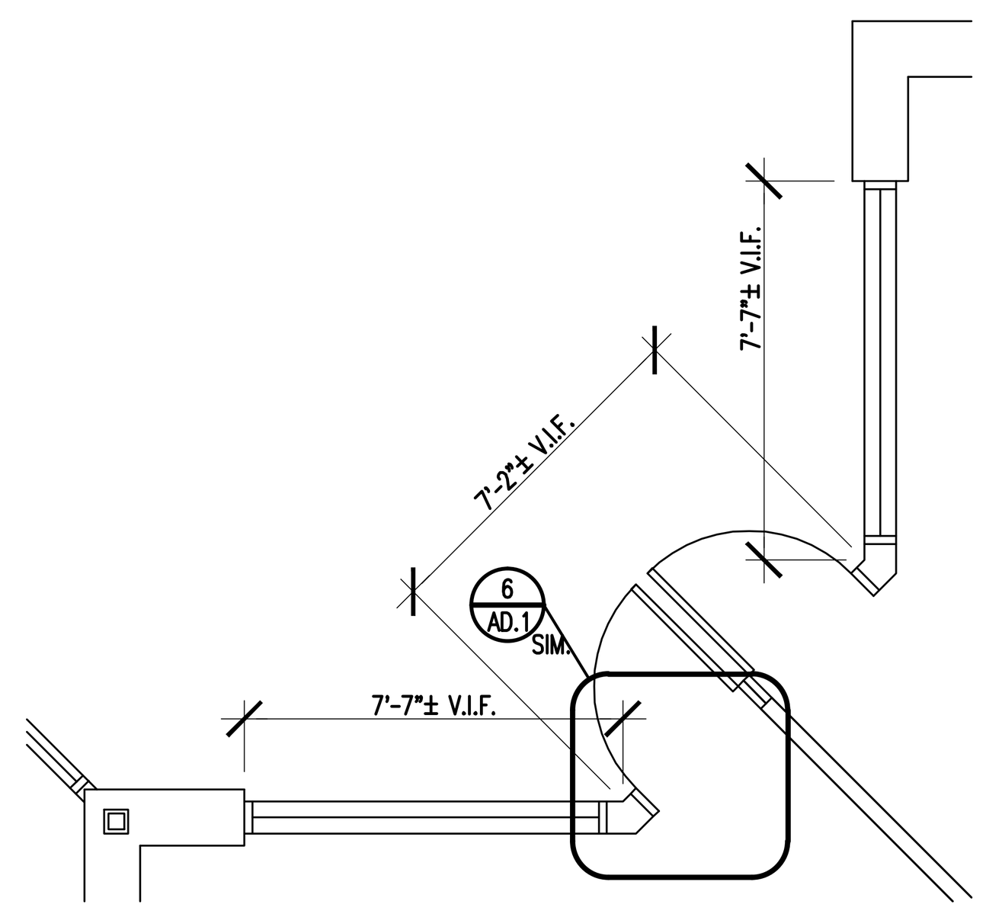
DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13167E

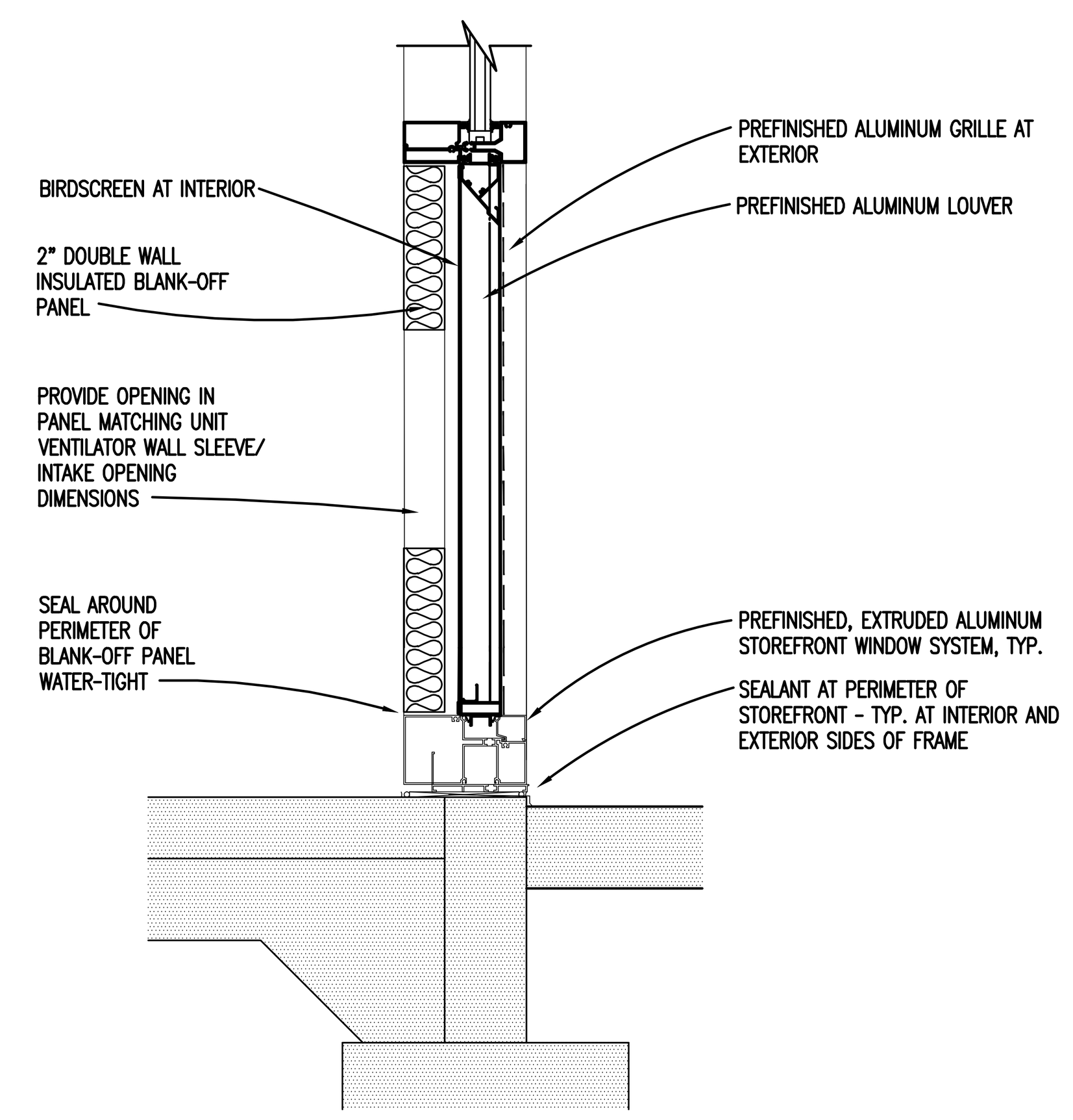
DRAWING NO.
AC.1



6 / AD.1 ALUMINUM DOOR JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



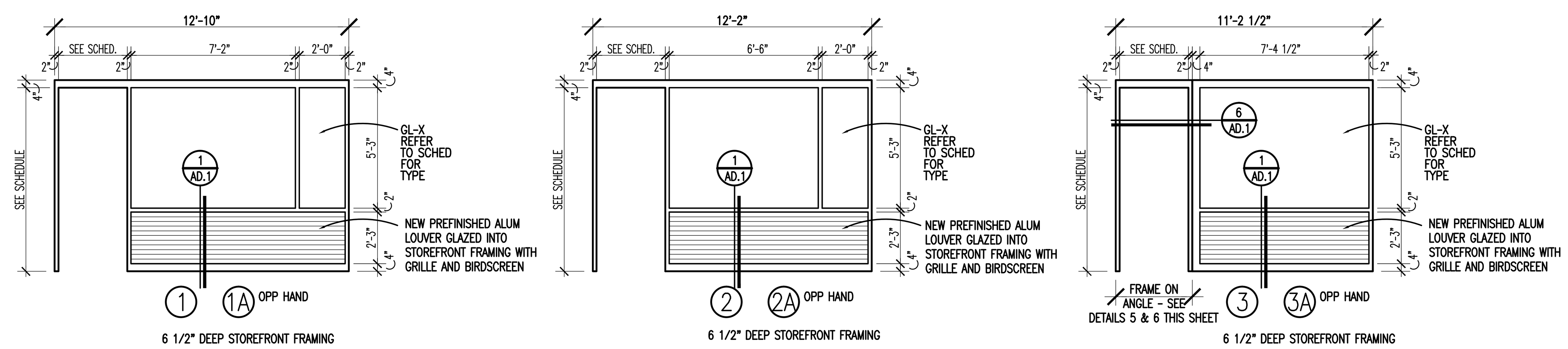
5 / A1.1B A1.1C TYPICAL CLASSROOM ENTRANCE
SCALE: 1/4" - 1'-0"



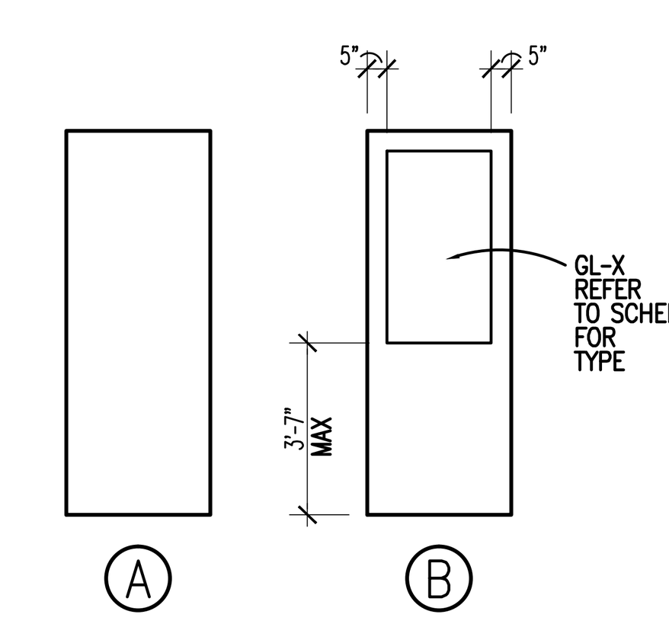
1 / AD.1 DETAIL AT LOUVER
SCALE: 1 1/2" = 1'-0"

DOOR & FRAME SCHEDULE

Opening		Door				Frame				Details						Remarks
No.	Opening Size (Width x Height)	Type	Material	Finish	Glass	Type	Material	Finish	Glass	Head	Jamb	Sill	Threshold	U.L. Label	Hdwe. Set	
Zone 'A'																
A137	3'-0" X 8'-0"	A	FRP	PFN	GL-11	1	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	2/AD.2 & 3/AD.2 SIM.	1/AD.1 & 1/AD.2	MET	.	1	
A141	3'-0" X 8'-0"	A	FRP	PFN	GL-11	2	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	2/AD.2 & 3/AD.2 SIM.	1/AD.1 & 1/AD.2	MET	.	1	
A145	3'-0" X 8'-0"	A	FRP	PFN	GL-11	2A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	2/AD.2 & 3/AD.2 SIM.	1/AD.1 & 1/AD.2	MET	.	1	
Zone 'B'																
B102	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B103	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B104	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B112	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B113	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B114	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B115	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B116	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
B117	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
Zone 'C'																
C102	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C105	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C108	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C111	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C114	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C117	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C128	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C131	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3A	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	
C134	3'-0" X 8'-0"	A	FRP	PFN	GL-11	3	AL	PFN	GL-11	4/AD.2 & 5/AD.2 SIM.	6/AD.1 & 2/AD.2	1/AD.1 & 1/AD.2	MET	.	1	



FRAME TYPES



DOOR TYPES

DOOR SCHEDULE ABBREVIATIONS AND NOTES

(REFER TO SPECIFICATIONS FOR ADDITIONAL DOOR INFORMATION)

DOOR SCHEDULE ABBREVIATIONS

AL	ALUMINUM
ALGL	ALUMINUM AND GLASS
HM	HOLLOW METAL
WD	SOLID CORE HARDWOOD
PFN	PREFINISHED BY MANUFACTURER
PTD	PAINTED
MAR	SYNTHETIC MARBLE THRESHOLD
MET	METAL THRESHOLD
LAM	PLASTIC LAMINATE CLAD
FRP	FIBERGLASS REINFORCED POLYESTER
STSTL	STAINLESS STEEL
STL	STEEL

DOOR SCHEDULE GENERAL NOTES

1. GALVANIZED METAL TO BE PROVIDED FOR HOLLOW METAL DOOR AND/OR FRAME AT EXTERIOR LOCATION.
2. DOORS ARE 1-3/4" THICK UNLESS OTHERWISE NOTED.
3. DETAIL NUMBERS NOTED SIM. REFER TO DETAILS SHOWING HEAD, JAMB, AND/ OR SILL DETAILS THAT REPRESENT CONDITIONS SIMILAR TO THOSE NOTED.
4. HOLLOW METAL FRAMES SET IN MASONRY WALLS ARE 5 3/4" WIDE (U.O.N.).
5. HOLLOW METAL FRAMES, SET IN GYPSUM BD. /METAL STUD PARTITIONS, SHALL BE "DOUBLE BACK-BEND" FRAMES WITH A THROAT DIMENSION EQUAL TO THE PARTITION THICKNESS PLUS 9/16" RETURNS ON EACH SIDE OF THE PARTITION. PROVIDE EQUAL RABBETS.
6. AN ASTERISK (*) CALLS ATTENTION TO THE REMARKS COLUMN OF THE SCHEDULE.

U.L. DOOR LABEL DESIGNATIONS:

U.L. LABEL**	MIN. OPENING PROTECTION ASSEMBLY
180	3 HR. FIRE RATING
90	1-1/2 HR. FIRE RATING
60	1 HR. FIRE RATING
45	3/4 HR. FIRE RATING
20	1/3 HR. FIRE RATING

** ALL FIRE RATED DOORS SHALL BE SMOKE AND DRAFT CONTROL LABELED IN ADDITION TO U.L. LABELS INDICATED.

ARCHITECTURE

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Door & Frame Schedule

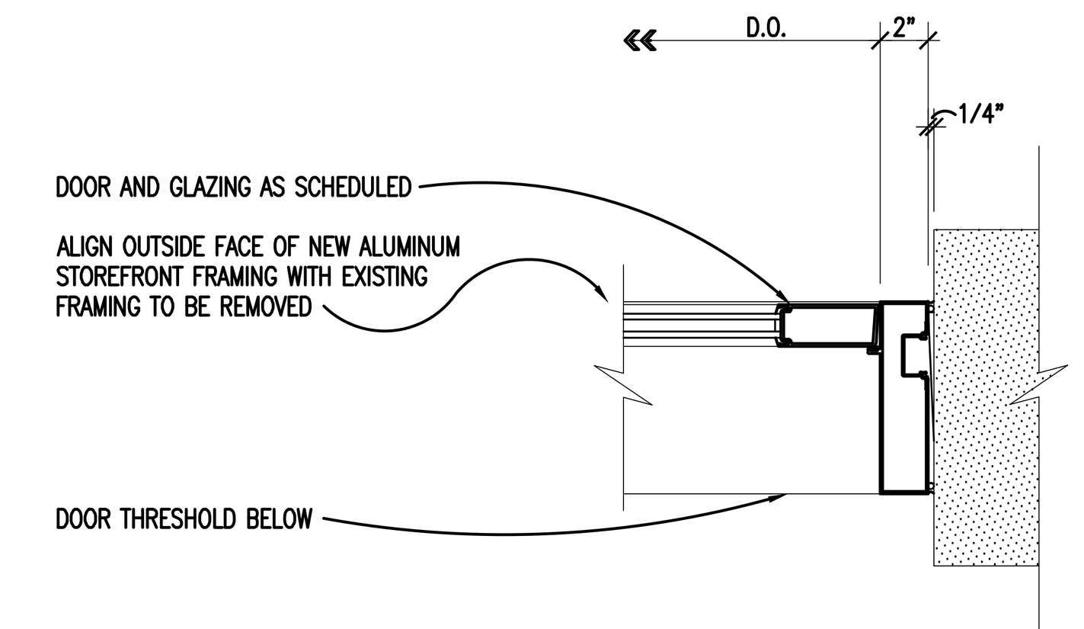
ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

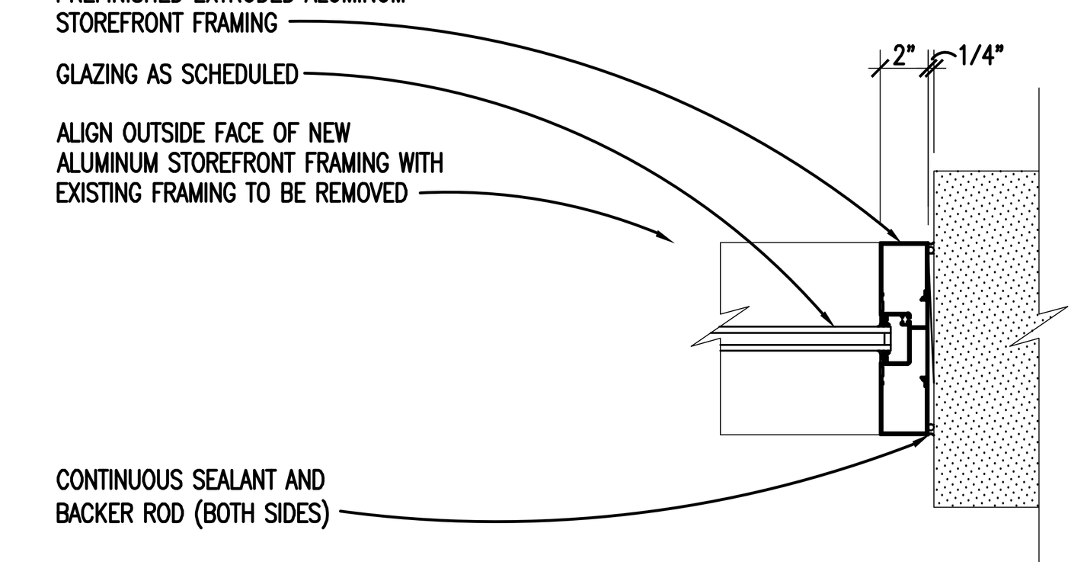
DRAWN JPW
CHECKED JPW
APPROVED JJC

PROJECT NO.
13167E

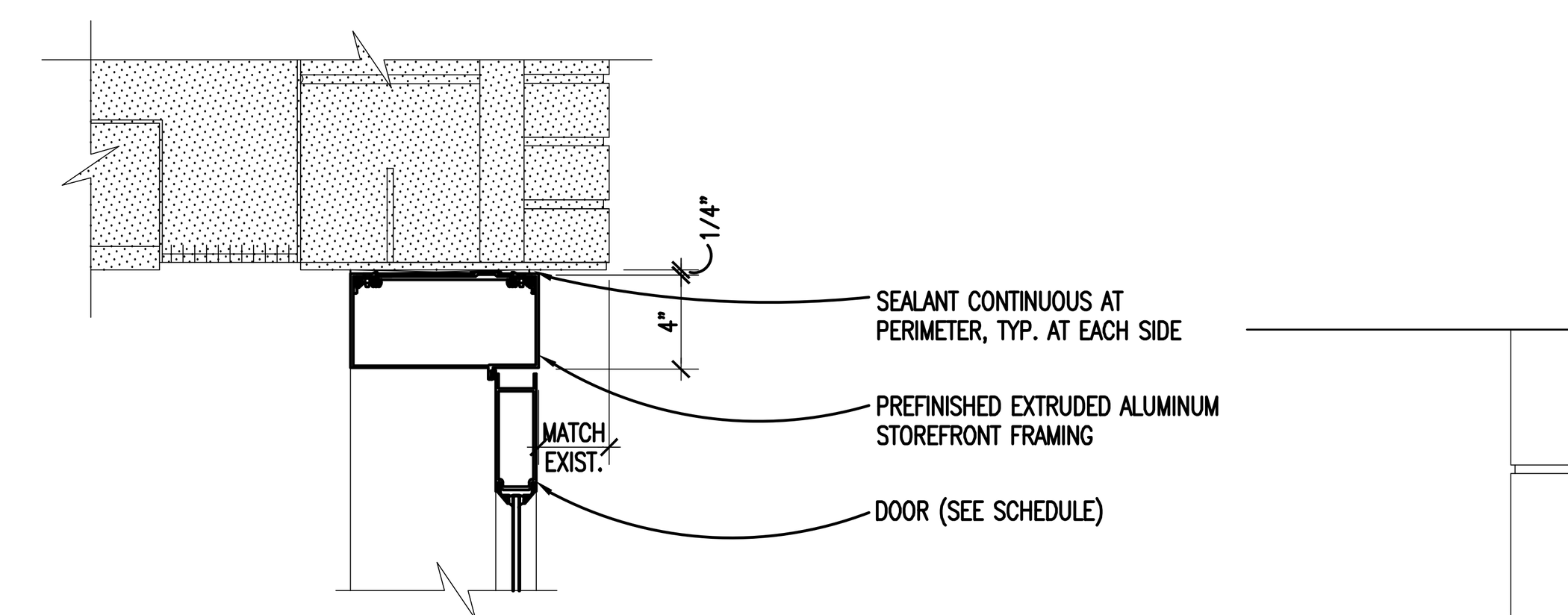
DRAWING NO.
AD.1



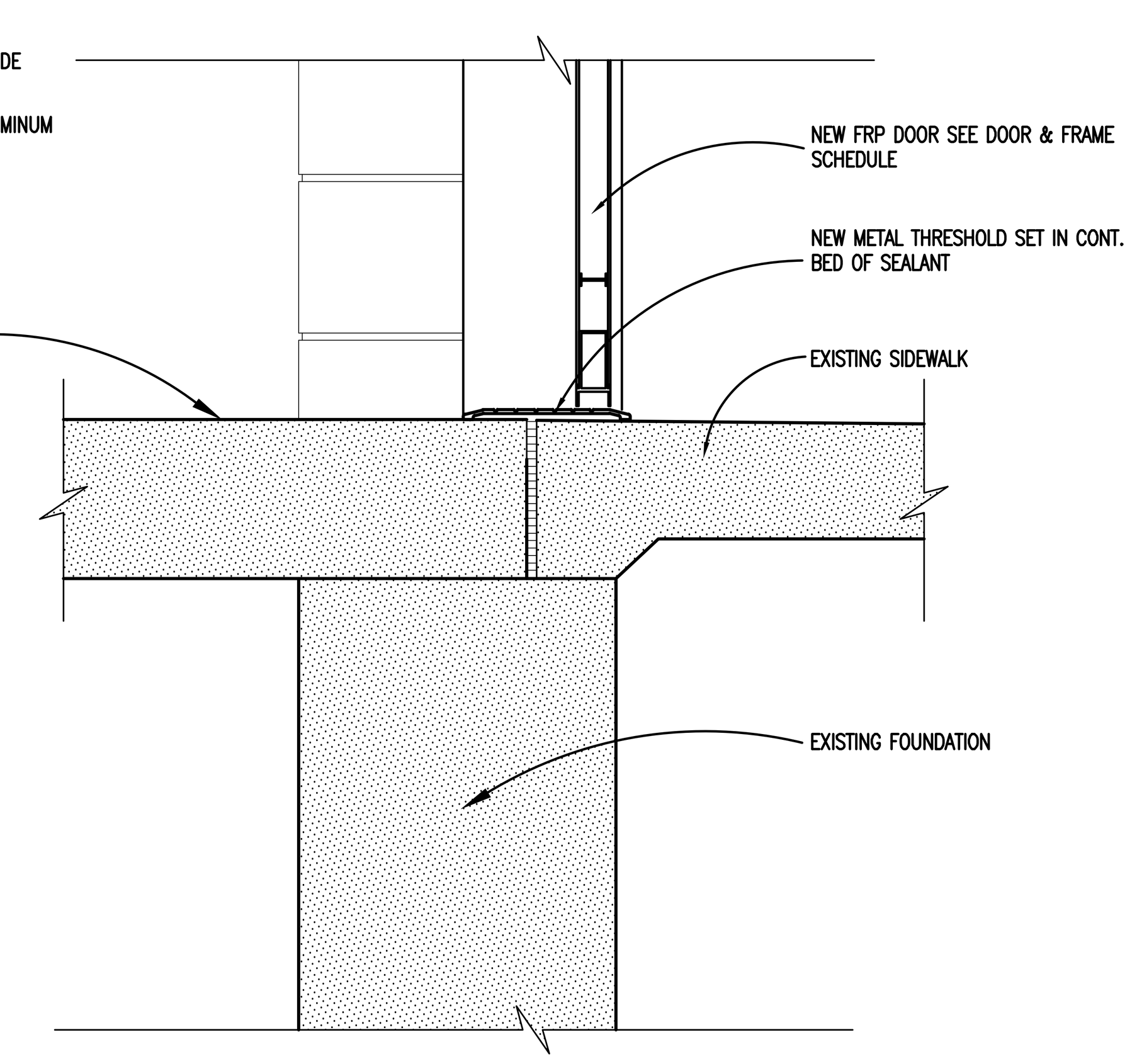
3 / AD.1 — ALUMINUM DOOR FRAME JAMB
SCALE: 1 1/2" = 1'-0"

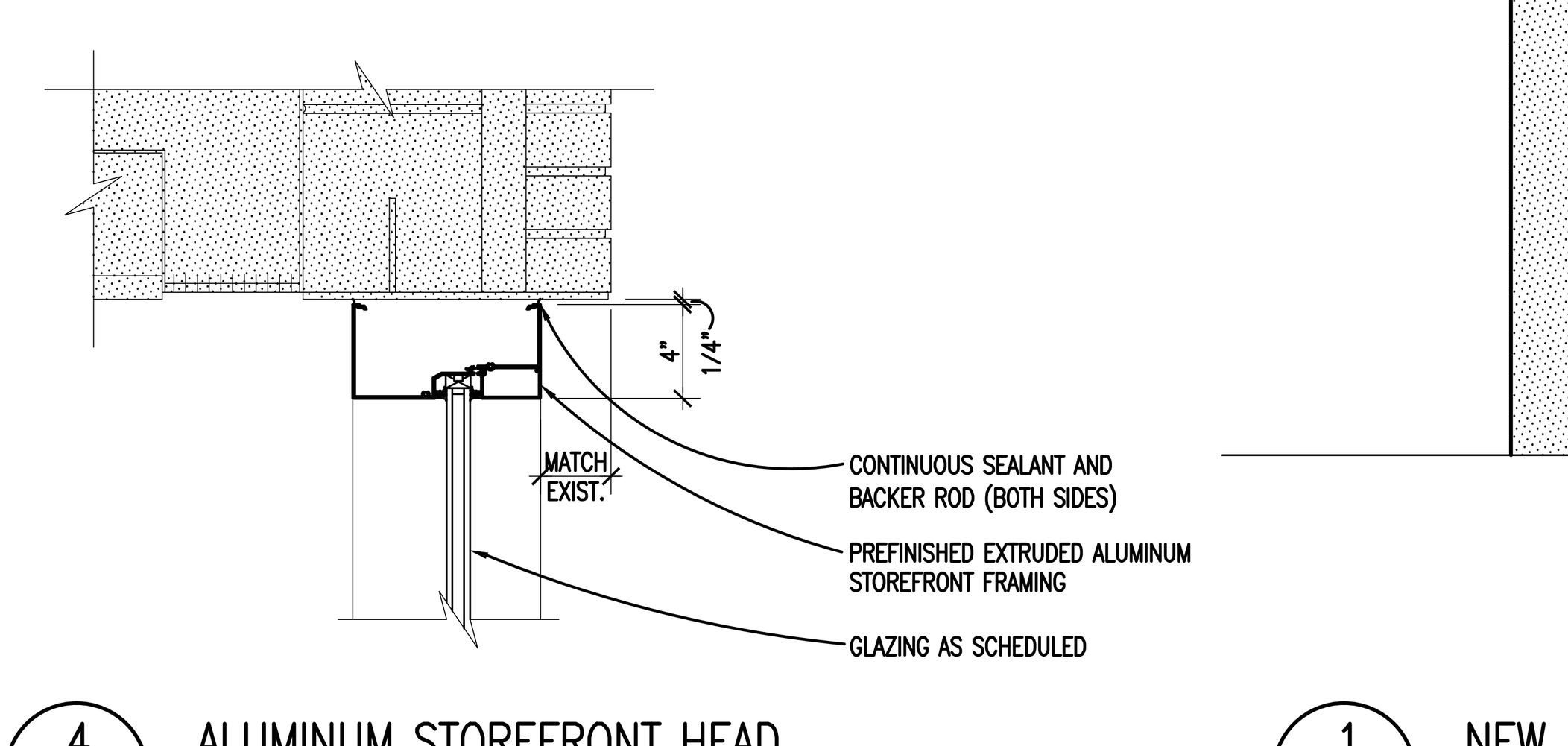


2 / AD.1 — ALUMINUM STOREFRONT JAMB
SCALE: 1 1/2" = 1'-0"



5 / AD.1 — ALUMINUM DOOR FRAME HEAD
SCALE: 1 1/2" = 1'-0"





4 / AD.1 — ALUMINUM STOREFRONT HEAD
SCALE: 1 1/2" = 1'-0"

1 / AD.1 — NEW FRP DOOR SILL
SCALE: 1 1/2" = 1'-0"

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Door & Frame Details

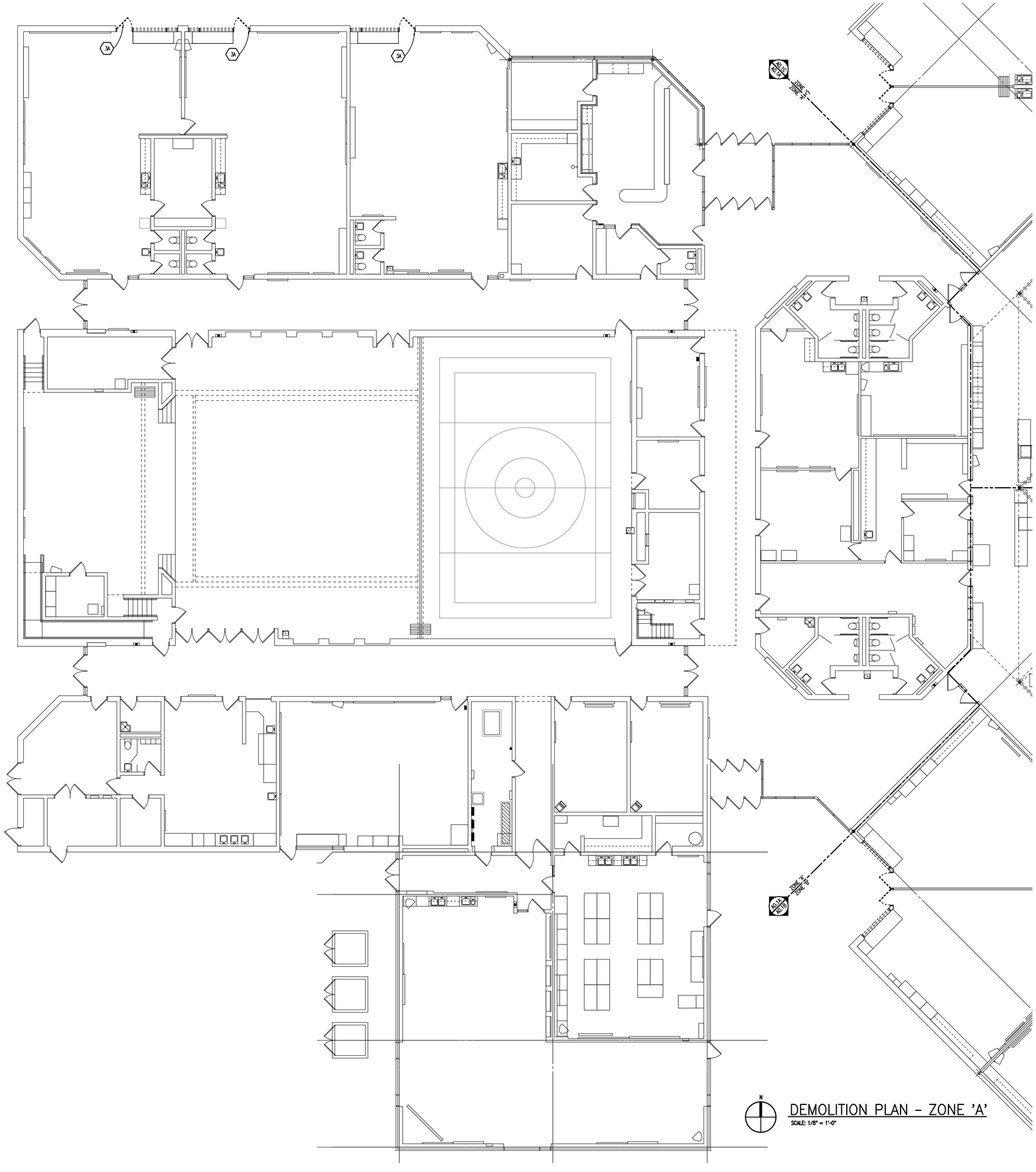
ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

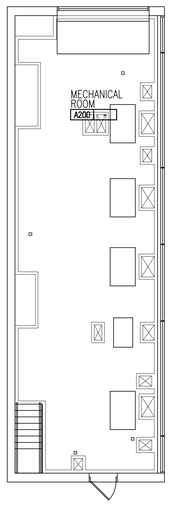
DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13167E

DRAWING NO.
AD.2



DEMOLITION PLAN - ZONE 'A'
SCALE: 1/8" = 1'-0"



MEZZANINE DEMOLITION PLAN - ZONE 'A'
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR RELATED AND ADDITIONAL DEMOLITION AND PATCHING WORK BY MECHANICAL AND ELECTRICAL TRADES.
2. SEE EXTERIOR ELEVATIONS FOR ADDITIONAL DEMOLITION AND PATCHING WORK AT EXTERIOR OF BUILDING, INCLUDING (BUT NOT LIMITED TO) DEMOLITION NOTES RELATED TO LOUVER AND/OR DOOR REPLACEMENT.
3. WHERE REMOVAL OF CASEWORK, MILLWORK, CHALKBOARD, TACKBOARD, OR EQUIPMENT, IS INDICATED, FILL HOLES AND PATCH EXISTING WALLS, BASES AND CEILINGS WHICH ARE TO REMAIN EXPOSED.
4. UNLESS OTHERWISE INDICATED, TOOTH NEW MATERIAL INTO EXISTING WHEREVER INFILL REMAINS EXPOSED.
5. SEE SPECIFICATION SECTIONS 017329 AND 024119 FOR ADDITIONAL DEMOLITION AND PATCHING REQUIREMENTS.
6. REFER ALSO TO ARCHITECTURAL DETAILS FOR ADDITIONAL SELECTIVE DEMOLITION.
7. PROTECT IN PLACE ALL FIXTURES AND SURFACES SCHEDULED TO REMAIN.
8. COORDINATE EXTENT OF ALL DEMOLITION WITH REQUIREMENTS OF NEW EQUIPMENT AND MILLWORK INSTALLATIONS.

DEMOLITION KEYNOTES

1. REMOVE LOWER GLASS PANE AT DOOR AND REPLACE WITH 1/4" THICK ALUM. PANEL GL-13. ADD CONTINUOUS HINGE TO DOOR. PAINT DOOR AND FRAME.
2. REMOVE EXTERIOR ALUMINUM FRAMING SYSTEM, ALUMINUM DOORS, SIDELIGHTS, DOOR THRESHOLDS, AND DOOR HARDWARE.
3. REMOVE EXTERIOR HOLLOW METAL FRAMING; HOLLOW METAL DOORS, SIDELIGHTS, LOUVERS, DOOR THRESHOLDS, AND DOOR HARDWARE.
3A. REMOVE EXTERIOR HOLLOW METAL FRAMING; HOLLOW METAL DOORS, SIDELIGHTS, LOUVERS, DOOR THRESHOLDS, AND DOOR HARDWARE BY ASBESTOS CONTRACTOR.
4. REMOVE FIRE ALARM PULL STATION FROM EXISTING WINDOW FRAMING. REINSTALL PULL STATION AFTER NEW WINDOW FRAMING IS INSTALLED

SALVAGED ITEMS

- DOOR HARDWARE - RETURN TO OWNER

TMP ARCHITECTURE

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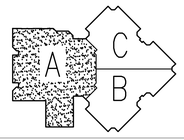
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Demolition Plan - Zone 'A'



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DRAWN	JPW
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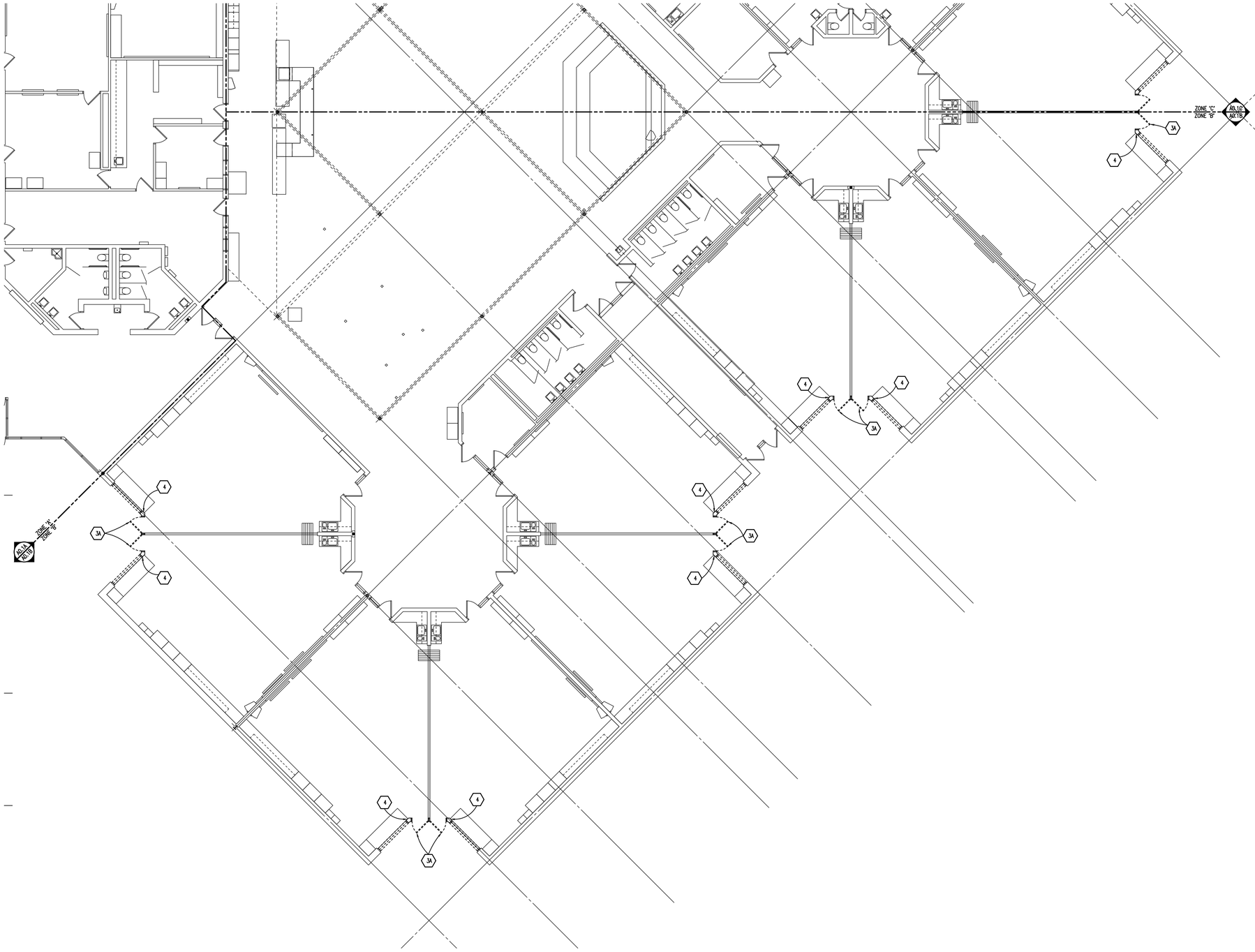
APPROVED	JJC

PROJECT NO.
13167E

DRAWING NO.
A0.1A



GENERAL NOTES

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SALVAGED ITEMS

- DOOR HARDWARE - RETURN TO OWNER

DEMOLITION PLAN - ZONE 'B'
SCALE: 1/8" = 1'-0"

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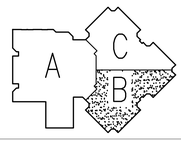
CONSULTANT

PROJECT TITLE
Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Demolition Plan - Zone 'B'



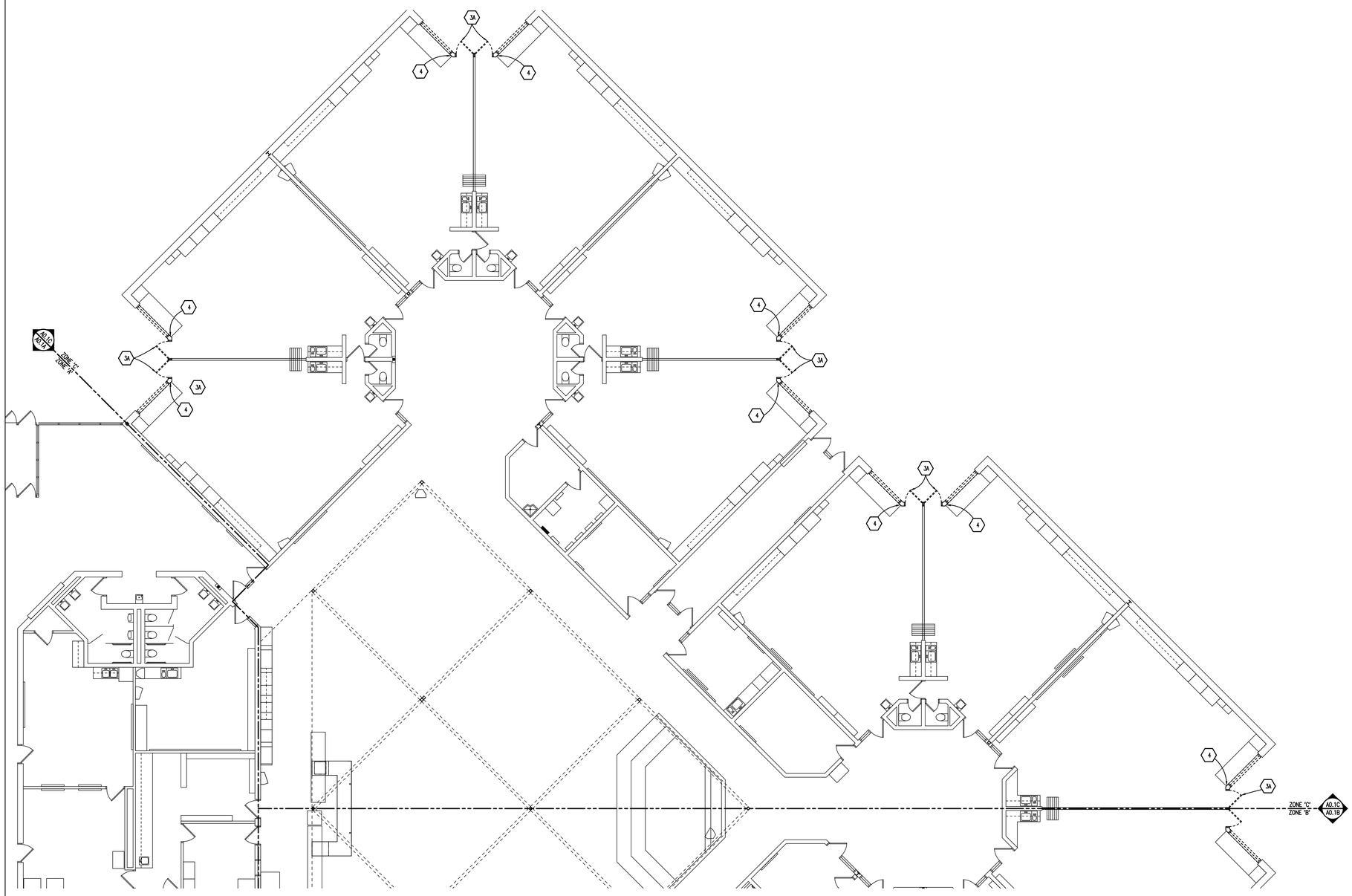
ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13167E

DRAWING NO.
A0.1B



DEMOLITION PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

GENERAL NOTES

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3. REMOVE EXTERIOR HOLLOW METAL FRAMING, HOLLOW METAL DOORS, SIDELIGHTS, LOUVERS, DOOR THRESHOLDS, AND DOOR HARDWARE.
3A. REMOVE EXTERIOR HOLLOW METAL FRAMING, HOLLOW METAL DOORS, SIDELIGHTS, LOUVERS, DOOR THRESHOLDS, AND DOOR HARDWARE BY ASBESTOS CONTRACTOR.
4. REMOVE FIRE ALARM PULL STATION FROM EXISTING WINDOW FRAMING. REINSTALL PULL STATION AFTER NEW WINDOW FRAMING IS INSTALLED

SALVAGED ITEMS

- DOOR HARDWARE - RETURN TO OWNER

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REGISTRATION SEAL

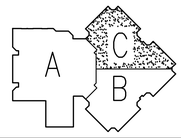
CONSULTANT

PROJECT TITLE

Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Demolition Plan - Zone 'C'



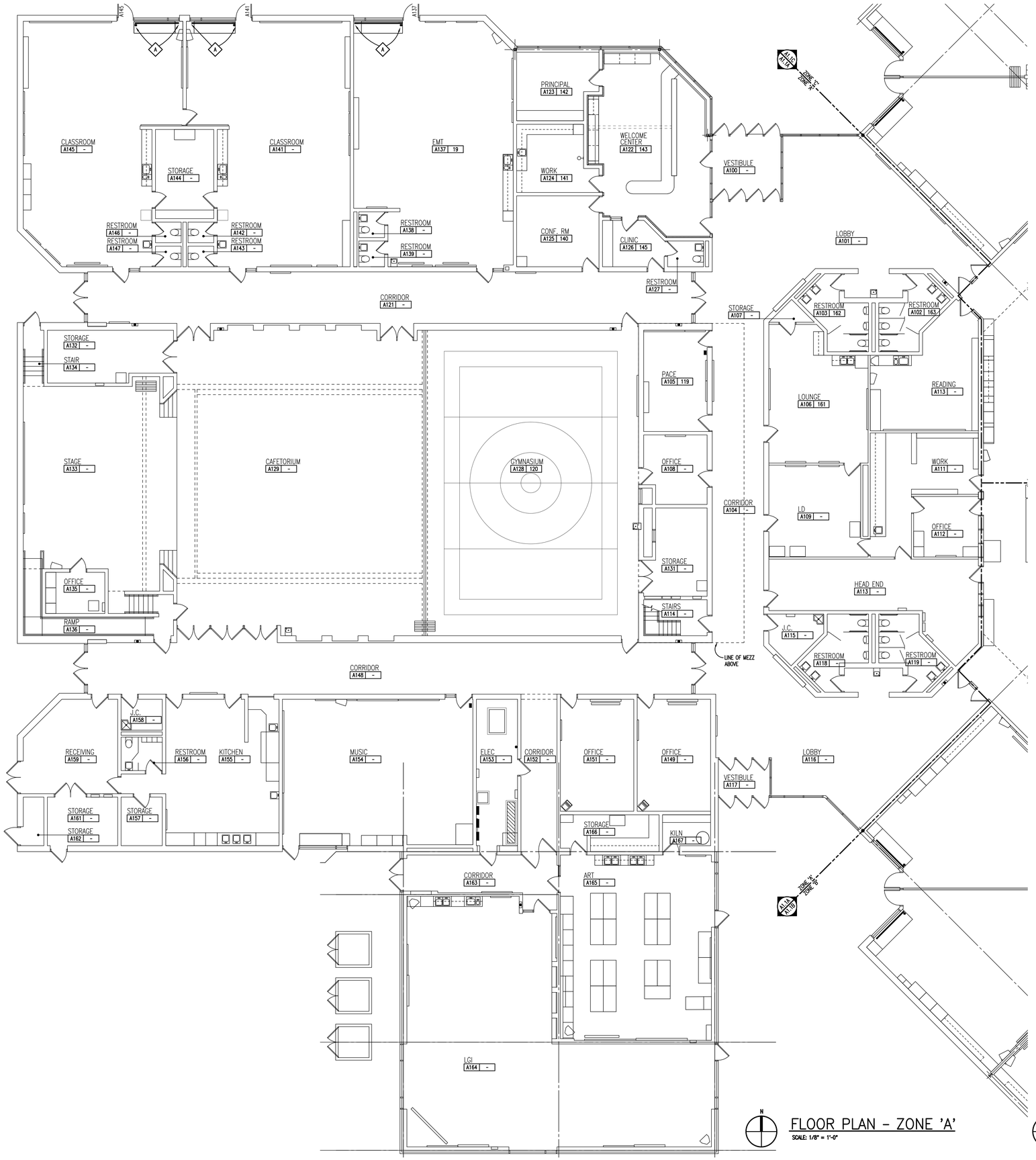
ISSUE DATES

12-16-2020	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

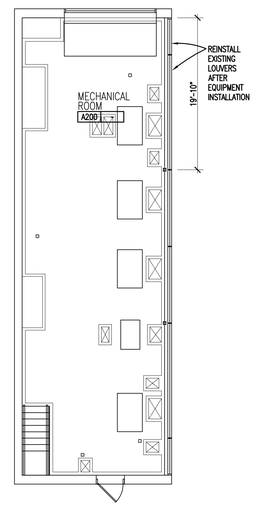
PROJECT NO.
13167E

DRAWING NO.
A0.1C



FLOOR PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"



MEZZANINE PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING PADS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER.
2. CONTRACTORS SHALL VERIFY ALL NEW EQUIPMENT/MILLWORK INSTALLATIONS WITH EXISTING FIELD CONDITIONS. COORDINATE WITH PROPOSED INSTALLATIONS AND NOTIFY THE ARCHITECT'S REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK.
3. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.
4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTAITVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS WHERE NEW CONSTRUCTION OCCURS OR WHERE NEW CONSTRUCTION IS ADJACENT TO EXISTING CONSTRUCTION AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS TYPICAL. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
6. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS AND/OR DOCUMENTS. SHOP DRAWINGS SHALL BE REQUIRED THAT SHOW OPENINGS, NEW FRAMING MEMBERS, AND FIELD VERIFIED TIE-INS TO EXISTING STRUCTURAL FRAMING.
7. VERIFY ALL DIMENSIONS IN FIELD.
8. ALL CONCRETE FLOOR SLABS TO BE REMOVED SHALL BE SAWCUT TO PROVIDE A NEAT, CONTROL JOINT AT JUNCTURE OF NEW AND EXISTING CONCRETE FLOORS.
9. REFER TO THE COMPLETE SPECIFICATIONS FOR WORK REQUIRED TO COMPLETE CONSTRUCTION.
10. REFER TO MASONRY SPECIFICATION FOR VERTICAL REINFORCEMENT AND WALL BRACING NOT INDICATED ON DRAWINGS.

PATCHING NOTES

1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.
2. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH ADJACENT SURFACES AS ACCEPTABLE TO ARCHITECT. PATCH AND REPAIR SHALL EXTEND TO THE NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN, NATURAL, UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
3. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.

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REGISTRATION SEAL

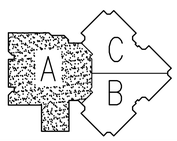
CONSULTANT

PROJECT TITLE

Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Floor Plan - Zone 'A'



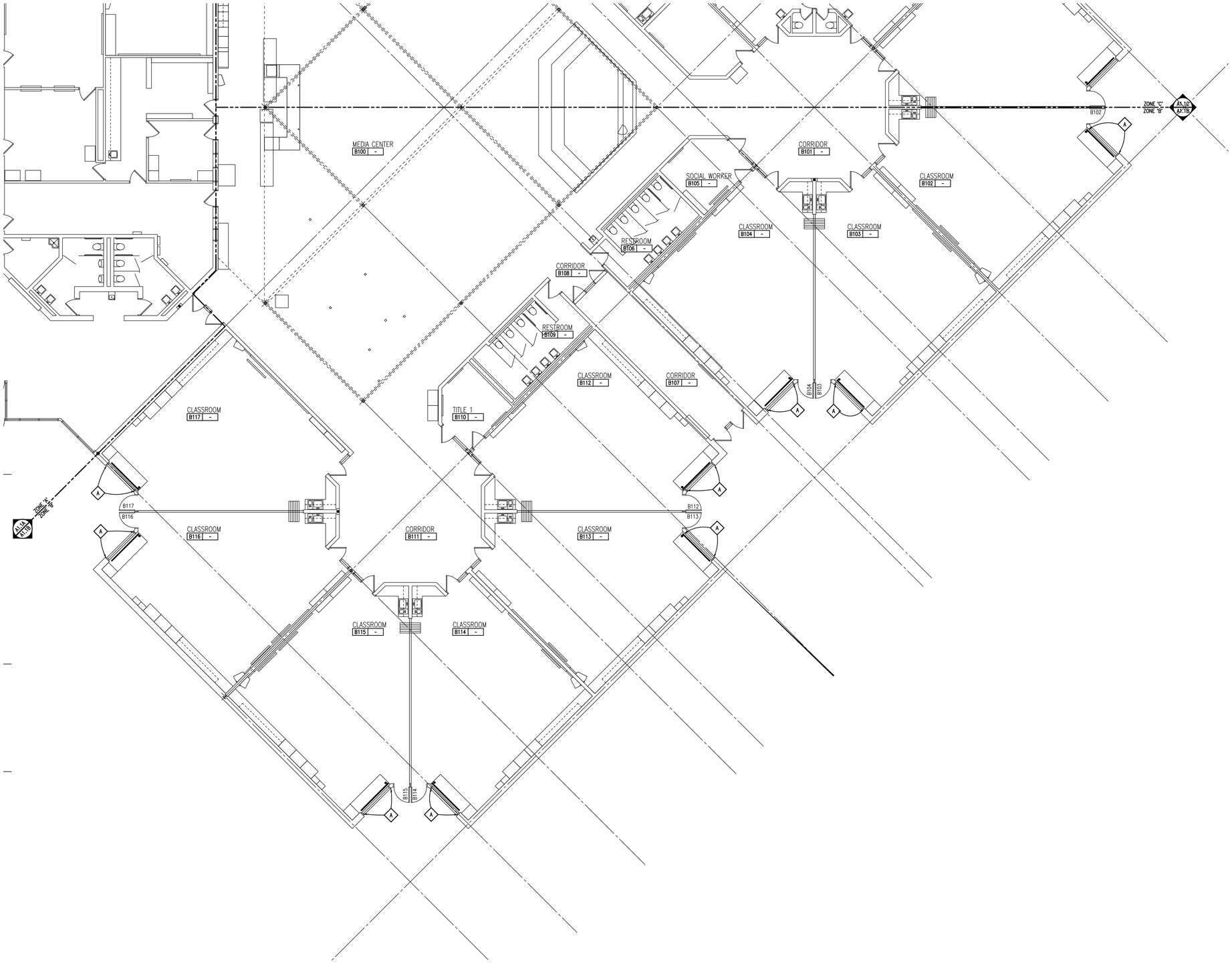
ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13167E

DRAWING NO.
A1.1A



GENERAL NOTES

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5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS WHERE NEW CONSTRUCTION OCCURS OR WHERE NEW CONSTRUCTION IS ADJACENT TO EXISTING CONSTRUCTION AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS TYPICAL. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
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1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.
2. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH ADJACENT SURFACES AS ACCEPTABLE TO ARCHITECT. PATCH AND REPAIR SHALL EXTEND TO THE NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN, NATURAL, UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
3. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.

FLOOR PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC

1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS · MICHIGAN · 48302
PH · 248.338.4561 FX · 248.338.0223
EM · INFO @TMP-ARCHITECTURE.COM

REGISTRATION SEAL

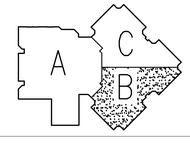
CONSULTANT

PROJECT TITLE

Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE
Floor Plan -
Zone 'B'



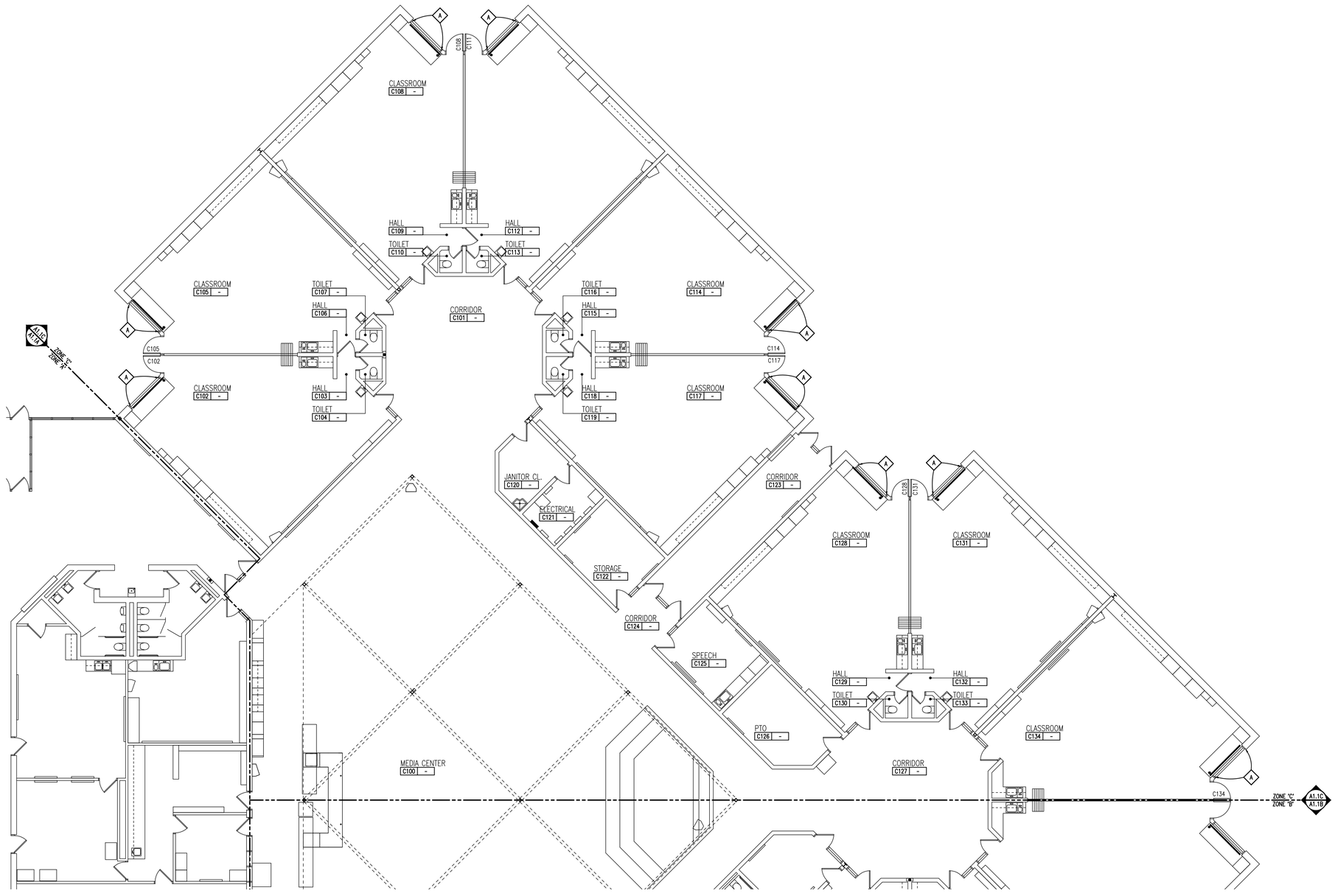
ISSUE DATES

DATE:	ISSUED FOR:
12-16-2020	CONSTRUCTION DOCUMENTS

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.
13167E

DRAWING NO.
A1.1B



FLOOR PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING PADS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER.
2. CONTRACTORS SHALL VERIFY ALL NEW EQUIPMENT/MILLWORK INSTALLATIONS WITH EXISTING FIELD CONDITIONS. COORDINATE WITH PROPOSED INSTALLATIONS AND NOTIFY THE ARCHITECT'S REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK.
3. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.
4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS WHERE NEW CONSTRUCTION OCCURS OR WHERE NEW CONSTRUCTION IS ADJACENT TO EXISTING CONSTRUCTION AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS TYPICAL. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
6. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS AND/OR DOCUMENTS. SHOP DRAWINGS SHALL BE REQUIRED THAT SHOW OPENINGS, NEW FRAMING MEMBERS, AND FIELD VERIFIED TIE-INS TO EXISTING STRUCTURAL FRAMING.
7. VERIFY ALL DIMENSIONS IN FIELD.
8. ALL CONCRETE FLOOR SLABS TO BE REMOVED SHALL BE SAWCUT TO PROVIDE A NEAT, CONTROL JOINT AT JUNCTURE OF NEW AND EXISTING CONCRETE FLOORS.
9. REFER TO THE COMPLETE SPECIFICATIONS FOR WORK REQUIRED TO COMPLETE CONSTRUCTION.
10. REFER TO MASONRY SPECIFICATION FOR VERTICAL REINFORCEMENT AND WALL BRACING NOT INDICATED ON DRAWINGS.

PATCHING NOTES

1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.
2. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH ADJACENT SURFACES AS ACCEPTABLE TO ARCHITECT. PATCH AND REPAIR SHALL EXTEND TO THE NEAREST NATURAL BREAK OR TERMINATION FOR A CLEAN, NATURAL, UNBLEMISHED APPEARANCE AT THE END OF CONSTRUCTION.
3. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.

WINDOW TREATMENT LEGEND

WINDOW TREATMENT

CONTROL MECHANISM LOCATION

A TYPE 'A' - MANUAL, 3% OPEN

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REGISTRATION SEAL

CONSULTANT

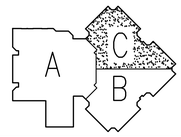
PROJECT TITLE

Wass Elementary School Remodeling Bid Package No.31

Troy School District
Troy, Michigan

DRAWING TITLE

Floor Plan - Zone 'C'



ISSUE DATES

12-16-2020	CONSTRUCTION DOCUMENTS
DATE:	ISSUED FOR:

DRAWN	JPW
CHECKED	JPW
APPROVED	JJC

PROJECT NO.

13167E

DRAWING NO.

A1.1C

Troy School District
2013 Bond Program

Bid Package #31 Hamilton and Wass Exterior Doors and Windows

Addendum #01

Issued 01/11/2021

Content Included in this Addendum:

Cover Page (1 Page)
Pre-Bid Meeting Minutes (4 Pages)
Pre-Bid Clarifications and RFIs (2 Pages)
Work Scopes (4 Pages)

TOTAL PAGES: 11 Pages

January 5, 2021

The School District of the City of Troy
Bid Package 031: Hamilton and Wass Exterior Doors and Windows

Pre-Bid Meeting Agenda

I. Introductions

A) Barton Malow Builders:
- Larry Bukowski – Project Manager
- Don Weimer – Superintendent
- Josh Eisenman - Project Engineer

B) Troy Schools District:
- Michelle Kerns– Owners Representative
- Rob Carson – Director of Operations

C) TMP Architecture, Inc
- John Waldrop - Architect
- Franco Antonnicola - Architect

II. Project Overview

A) Summary of Bid Package Work Scope:
- Wass Elementary School
  - Exterior doors and window replacement
- Hamilton Elementary School
  - Demolition
  - Exterior doors and window replacement

B) The Contracts for this project are held between Troy School District and the Contractor. Barton Malow Builders is the Construction Manager acting as an agent to The Troy School District

C) Construction Milestone Schedule is as follows as well as located in section 00230 of the Project Manual. The intent is to perform all work as expeditiously as possible.

D) The project will utilize BIM 360 as the document processing software please review the project work scopes for the cost information and details.

MILESTONE ACTIVITY	SCHEDULED START	SCHEDULED COMPLETION
Pre-Bid RFI Cut off		January 7th 2021
Post Bids		January 15th 2021
Contracts Awarded		February 16th 2021
Submittals	February 17th 2021	March 16th 2021
Construction	June 21st 2021	August 20th 2021
Project Substantial Completion		August 20th 2021
Punch List	August 23rd 2021	September 17th 2021

E) Site Walk
- Contractors are encouraged to walk the sites before submitting a bid. Barton Malow Builders must be notified of your site visit at least 4 hours before arriving. Sign in the office before visiting an area.

Bidder Requirements

A) Bid Due Date and Requirements
- Bids are due on **January 14th 2021 (01/14/2021) by 2:00 pm EST** by online submission through Building Connected. Bid opening will be held virtually at 2:00 pm on January 14th, 2021. No extensions will be given. Link to the livestream can be found information section in Building Connected.
- **Any bid that does not include a completed, signed, and notarized Familial Relationship Disclosure Form or Iran Economic Sanction Form (located in the Project Manual) will not be publicly read.**

B) Bonding Requirements
- The contractor is required to provide a 5% bid security with their bid. **Any bid that does not include a bid security will not be publicly read.**
- After award of contract, the contractor will be required to provide Performance & Payment Bonds.
- The bonding company supplying the bond must be based in the United States and licensed to do business in the State of Michigan with a rating of A-7 or higher.

C) Addendum Status
- Addendum No. 1 will include the Pre-Bid Meeting Minutes, Sign-In Sheet and Pre-Bid RFI answers.

- **Safety:**

A) Each contractor is required to provide personal fall arrest system for workers above 6 feet (above 24 feet on ladder). This includes all work on the roof. Provide harness, lanyard, and tie-off points per MIOSHA standards. The 6 foot tie-off rule is a Barton
B) Barton Malow standard and will be enforced. All workers on fully planked, and guard rail scaffolding will not be required to wear a harness.
C) Ear/Eye protection will be required as it applies to the work being performed.
D) Each contractor working within an aerial lift must be certified to drive the piece of equipment onsite. Lift cards will be required.
E) Each contactor is required to have one worker certified in CPR/first aid onsite at all times.

F) Contractor, as well as employees must be Certified Lead Renovators as required by the EPA effective April 22, 2010.
G) Barton Malow has a zero-tolerance policy regarding safety. Any workers found conducting work in an unsafe manner will be sent home.
H) Each awarded contractor will be responsible to provide to Barton Malow (3) safety binders with specific safety documents enclosed.
I) Each contractor that builds a scaffold must have a certified competent scaffold builder reviewing the scaffold erection. In addition, the competent person is required to check the scaffold daily for any changes in the scaffold condition. Scaffold certification cards will be required. Include all cost in base bid.

III. Questions & Comments

- All contractors are to include all cost to provide 100% fall protection per Barton Malow's 6 foot fall rule. The 6 foot fall rule states: all contractors working at or above 6 foot must provide and use a fall arrest system with tie off points. However, use a guard rail system with complete top, mid, and toe rails/boards is acceptable in compliance with the MIOSHA standards.
- All contractors shall include all cost to install all new work within occupied spaces during non-instructional times related to the work occurring during the school year.
- End of day for all contractors shall be 11:00 pm Mon-Fri.
- First day of school is 9/8/2020.
- Submit RFIs to Barton Malow Builders through BuildingConnected for a response. Pre-bid RFI's must be received no later than close of business on 1/04/21 (5:00pm) so that adequate time is given for each contractor to receive appropriate answer via addendum.
- Pay close attention to plans and specifications.
- It is encouraged for all contractors to qualify their bid if there are any items that are unclear.
- This project does not fall under the Davis Bacon Prevailing Wage Law.
- The bidders list is available upon request to any subcontractors. Please contact Barton Malow for details.
- Please note: MIOSHA inspections have recently been full complete 3 to 4 day inspections. All contractors are to follow all MIOSHA and BMC standards at all times. Failure to abide by the standards will not be tolerated.
- All Contractors are to follow the current lead requirements as it applies to each work category.

Respectfully Submitted,
BARTON MALOW BUILDERS
Josh Eisenman – Project Engineer

Barton Malow BUILDERS

MEETING SIGN-IN SHEET

DATE: JANUARY 5, 2021

TIME: 11:00 AM

LOCATION: TROY SCHOOLS DISTRICT HAMILTON AND WASS ELEMENTARIES

2340 WILLARD DR, TROY, MI 48085

PROJECT: BP 31 2013 BOND PROJECT

TROY SCHOOL DISTRICT

SUBJECT: PRE-BID MEETING

ATTENDEES (Please print legibly)	COMPANY	TELEPHONE/FAX	E-MAIL ADDRESS
RICH SCHNEIDER	INTEK	248 797-2105	RSCHNEIDER @ INTEKCO.com
SAM HARRIS	COMMERCIAL Glass	2484792606 PH	Joe@newglassanddoor.com
DON WEIMER	BALL	248-366-0615	
FRANCO ANTONNICOLA	TMP	313-378-2716	
Josh Eisenman	Barton Malow	880 651 7658	

PSI 12.9 (11/03/06)

January 11, 2021

Troy Schools District
BP #31 2013 Bond Program

Addendum #1 Bidder Clarifications

A. General Clarifications

None.

B. Clarifications and Additions to Work Scopes – *Reference Specification Section 00220*

Bid Category 080000 Work Scope Item 3P

Contractor to remove existing window shades

Bid Category 080000 Excluded from Contractors Work Section

Item #2 ~~Removal and replacement of roller shades~~ Replacement of roller shades

Added item #5 Blank off panels

Summary of changes.

Glazing contractor is responsible for the removal of existing window shades. Blank off panels are to be the responsibility of the mechanical contractor

C. Request for Information: All contractors are responsible for reviewing all RFI's as some answers might pertain to their scope of work regardless of the division the question may have originated from.

Bid Category 080000

Q: Louvers - will the mechanical contractor be involved with disconnecting/reconnecting and installing the louvers into our frames?
A: No

Q: Louvers – Are we picking up the costs of the louvers in our bid?
A: Yes

Q: Demo at Wass Elementary – Will your demo/abatement contractor be removing all the entrances at once and securing the building? Or will the Demo and installation have to be coordinated with a certain amount of openings per phase.
A: The intent is to have the abatement contractor start the demo and when they are several openings ahead have the glazing contractor start and follow them

Q: Expanded metal specified by Special Lite to match – Can we bid this out with our expanded metal supplier? Or do we need to get from Special Lite. Before responding, please consider we have Special Lite Door Frames and EFCO Window Framing adjacent to each other.

A: Break metal trim may be supplied from other than Specialite as long as color matches

Q: Special Lite Framing and EFCO Framing transition. Are there Details of how the architect wants to connect the two systems.
A: All framing to be by same manufacturer

Q: Request for Details to glaze louvers into our framing system, clearances, gaskets, sealant. System specified is a pock set system so we may have to install with angle and seal. Please send all details as to what will be expected.
A: Louvers to be glazed into framing system. If this needs to be top and bottom only, this is acceptable

Q: Scope clarifications with other incidental trades- more specifically electrician and HVAC contactor.
A: Electrician - Remove/reinstall FA, HVAC - install blank off panel and condensate

Q: Will electrician remove all, switches, conduit and fire alarm devices etc. prior to our demolition?
A: Yes

Q: Will HVAC do all selective demo work, removing covers, removing connections from existing storefront, separating HVAC from existing storefront prior to our demolition of existing storefront?
A: The intent is to not remove the UV's, and all demo will be completed from the exterior.

Q: Will HVAC provide and install new louvers, blank off panels and make all connections complete after or during our installation?
A: Louvers are the glazing contractor’s responsibility, blank off panels HVAC

Q: Would like to suggest we install new system complete and then have HVAC install louvers. We can coordinate or split the scope, need clarification.
A: Same as RFI 10

Q: FYI concrete may heave at entrances that do not have a frost footing.
A: Troy schools will address

Q: We will use alternate contractor for Expanded metal in lieu of special lite as they do not typically provide that type of material. Sample will be provided.
A: Refer to No. 4 above

Q: FYI we will use Special Lite Frames and directly clip or screw spline Efco metal to the door frames as the transition point, samples of the two metals will be provided.
A: Refer to no.5 above

SECTION 00220
WORK SCOPE

BID CATEGORY 080000 – ALUMINUM WINDOWS/ DOORS/ ENTRANCES

The Work of this Bid Category includes but is not limited to providing all labor, equipment, materials, scaffolding, hoisting and incidentals to complete all Demolition 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:

Division 00 Bidding Requirements	
Division 01 General Requirements	
Division 02 Existing Conditions	
024119	Selective Demolition
Division 06 Woods, Plastics, and Composites	
061000	Rough Carpentry
Division 07 Thermal and Moisture Protection	
079200	Joint Sealants
Division 08 Openings	
082250	FRP Doors
084113	Aluminum Entrances and Storefronts
087100	Door Hardware
088000	Glazing
089000	Louvers

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) **Safety:**
   a. Refer to Barton Malow's Safety Manual as well as the Safety and Loss Control Section 00810 of Project Manual for safety requirements on this project which includes but is not limited to the following:
      i. Mandatory safety orientation (approximately 1-2 hours)
      ii. Fall protection requirements – four feet minimum
      iii. Daily pre-task plans and plan of day is to be documented and safety meetings must be conducted
      iv. OSHA 30-hour course required for designated safety representatives
      v. Provide a full time non-working on-site safety representative when crew size increase to twenty (20) workers or more.
      vi. Provide PPE for all workers, including hardhat, safety glasses, high vis vest and gloves.
   b. Provide, install and maintain safe access to work areas including housekeeping for identifiable and non-identifiable items.
   c. Provide fire watch for all "hot work" operations. Complete Hot Work permit daily for each piece of welding or hot equipment inclusive of all fire protection safety prevention measures necessary.

i. Fire watch shall be continuous during field burning/cutting with acetylene gas torches/welding burning / cut off demo saw work for a minimum period of two (2) hours after the event for interior work and one (1) hour for exterior work after work process is completed. Subcontractor to ensure that NO FIRE HAZARD exists at all times and the Subcontractor shall provide means, method, techniques, sequence and procedure of abatement/demolition as required.

d. Provide ladders and baker scaffolding as necessary to safely access work.
e. Contractor to verify that all existing utilities have been properly shut off or disconnected prior to any demolition activities that might affect utilities.
f. Contractor to coordinate with Barton Malow, Owner, Building Management and all municipality entities any shut down of utilities.
g. Refer to Barton Malow's Mobilization and Ongoing Operations Guidelines which includes but is not limited to the following documents
   i. Coronavirus Questionnaire
   ii. Coronavirus Toolbox Talk
   iii. Site-Specific Emergency Action Plan

2) General Requirements:

a. Contractor shall visit the site and familiarize themselves with the project layout, existing conditions, site access, etc. and all other obstacles with the Work areas. Contractor is responsible for all means of setting up and relocating their equipment and materials to perform this Work as well as in conjunction with other trade contractors. There will be no additional compensation made for reason of omission or interpretation as it relates to the aforementioned required site visit.
b. All Applications for Payment and all supporting documents (including but not limited to lien waivers, sworn statements, and the like) for Contractor and its Subcontractors and suppliers, shall be in electronic format and shall be submitted using the Oracle Textura Payment Management (TPM) system. Contractor shall be responsible for the fees and costs owed associated with Contractor's use of TPM. Contractor shall include a similar provision in its Subcontracts and purchase orders. Fees to Contractors are calculated as 0.22% (22 basis points) of contract value (plus applicable taxes), with a maximum fee of $3,750. Fees to Contractors Subcontractors and suppliers are a fixed fee of $100 per sub-subcontractor or supplier contract. These fees must be carried within the Contractors Bid Proposal
c. Contractor acknowledges that means of removal of materials and products from the space and transport to dumpsters.
d. Provide daily cleanup of all work areas.
e. Provide all permits necessary for work. Provide intermediate inspection and final approval documentation from the relevant municipalities.
f. Protect existing surroundings to work areas and pathways to work areas.
g. Provide all costs for trucking and any associated fees or charges.
h. Provide all costs for equipment necessary to load and unload materials and equipment as well as hoisting needed for own work.
i. Provide detailed schedule for work immediately upon award of project. Schedule shall meet milestones as shown in the project schedule included in this manual. In order to maintain schedule, multiple crews may be required.
j. Due to limited space available for lay down, this Subcontractor shall plan on a timely delivery of material and removal of debris.
k. Contractor is required to attend a Pre-Job Coordination Meeting prior to beginning work. The meeting shall be attended by this Subcontractor and any of its contractors.
l. Include all pricing for receiving and handling of all materials as well as any necessary temporary storage.
m. The District reserves the right to award each building separately.
n. The Project will use BIM360 for documentation. Each Contractor is to include a $600 charge for using BIM360 as part of their base bid. Contractor will be invoiced directly at project start-up with payment submitted prior to the start of work.

3) Construction Requirements:

a. Furnish and install complete aluminum entrances, aluminum curtain walls, windows, sunscreens & related hardware, flush aluminum FRP doors/aluminum frames, door sweeps for a weather tight seal and glass including but not limited to all glazing, sealers, caulking and aluminum framing. Furnish and install all aluminum sills and break metal trim, interior and exterior.
b. Supply and install all glass and glazing required for this project in all doors (including, but not limited to FRP doors and aluminum doors), hollow metal doors, pre-finished wood doors, sidelights and aluminum windows, and as specified.
c. Furnish and install all finish hardware, thresholds, and construction cores. Doors must be prepped to receive Schlage Everest Interchangeable cores. Final keying will be done by the owner.
d. Contractor to provide plywood enclosure to the building at the end of each day if opening is not completely reinstalled. All openings are to be secured and weather tight at the end of each workday.
e. Remove tags and final clean all surfaces properly, after new doors, glass, panels and window systems are installed.
f. All aluminum frames and doors to be factory finished, as specified.
g. Demo of entrance doors and frames are to be coordinated with the security contractor. Security contractor shall demo existing security hardware before demo of the doors and frames begins.
h. Demo of doors and window systems at Hamilton are to be included in this contractor's work.
i. Any cutting and patching required for installation of new work shown or not shown on the contract documents for work of this bid category is the responsibility of this contractor.
j. Coordinate raceway and installation of low volt wiring for the reinstallation of all door security devices is the responsibility of this contractor.
k. Provide a final cleaning of new interior and exterior glazing & aluminum framing at the direction of the construction manager.
l. Complete hardware manufacturer's adjustment and inspections as may be specified.
m. Include prefinished aluminum louver to be glazed into storefront framing with grille and bird screen as shown on detail 1 on drawing AD.1
n. Verify frame size
o. Coordinate removal and reinstallation of pull stations called out in demolition note 4 with Electrical contractor
p. Contractor to remove existing window shades

4) Temporary Protection Work Requirements:

a. Include temporary protection for any items that are not scheduled for removal during the demolition process. Should damage to any such property occur, it is the responsibility of this Contractor to repair property to like new condition or full replacement and all associated costs.

EXCLUDED FROM THIS CONTRACTOR'S WORK is:

1. Demolition of doors and window systems at Wass shown as demolition note 3A
2. Replacement of roller shades
3. Removal and reinstallation of pull stations called out in demolition note 4
4. Reworking of condensate drains
5. Blank off panels

SPECIAL CONSIDERATIONS:

1. Contractor shall furnish to Barton Malow all submittals within 10 business days of receipt of a Notice to Proceed.

END OF BID CATEGORY 080000 – ALUMINUM WINDOWS/ DOORS/ ENTRANCES

END OF SECTION 00220

BP 31 Hamilton and Wass Elementary Schools
Exterior Doors and Windows Bid Tab

Bid Category	Contractor	Base Bid	Comments
080000 Exterior Doors and Windows	Daniels Glass Inc.	$324,486.00	
080000 Exterior Doors and Windows	Peterson Glass Company	$388,000.00	
080000 Exterior Doors and Windows	Commercial Glass	$392,148.00	
080000 Exterior Doors and Windows	Hewett Company	$401,400.00	
080000 Exterior Doors and Windows	American Door and Glass MI	$405,833.00	