Telephone: 989-790-9120
Facsimile: 989-790-9063

Addendum #1

Attn:	Estimator	Date:	January 29, 2025
From:	Lisa Donahue, Project Administrator	Pages:	82 (including cover page)
Re:	2023 Bond Phase 3a Project Middle School	Project:	Bangor Township School District
CC:		Proj. #:	A23906-05

RFI Log	3 Pages
Arch write up	1 Pages
Spec Section 014000 Quality Requirements	11 Pages
Spec Section 087100 Door Hardware	29 Pages
Spec Section 088723 Safety and Security Film	5 Pages
Spec Section 101100 Visual Display Units	4 Pages
Spec Section 105113 Heavy Duty Corridor Lockers	3 Pages
Spec Section 230500 Common Work Results for HVAC	16 Pages
Pre Bid Agenda	2 Pages
Pre Bid Sign In	2 Pages
Revised Drawings	5 Pages

Electronic bids can only be submitted using Building Connected see link
https://app.buildingconnected.com/login?retUrl=%2F

If you would like to listen while bids are being opened, use the link.
https://8x8.vc/wolgast/lisa.donahue

Paper bids go to school – see below information.

Bid Date is scheduled for:
Friday, February 7, 2025 at 2:00 PM

Bangor Township School District
Administration Office
Matthew Schmidt, Superintendent
3359 E Midland Road
Bay City, MI 48706

Wolgast Corporation

Printed on Wed Jan 29, 2025 at 08:19 am EST

Job #: A23906-5A Bangor Twp - 23 Bond PH 3A - Middle School
3281 Kiesel Road
Bay City, Michigan 48706
9896848121

RFI LOG

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
15	Plumbing Maintenance	Open	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/28/2025	Dale Schwerin	01/31/2025		Finnila, Shannon ...				

Q: Dale Schwerin Sent Tue Jan 28, 2025 at 02:03 pm EST
22 05 00 – Common work results for plumbing – 3.5 Maintenance – A. Providing maintenance for 1 year. Is this included in this project? If it is required, is it only limited to the equipment in this project?

14	Pipe Painting	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Schwerin, Dale (W...	01/28/2025	Dale Schwerin	01/31/2025	01/28/25					

Q: Dale Schwerin Sent Tue Jan 28, 2025 at 02:01 pm EST
Pipe painting, Is the mechanical contractor required to finish paint the pipe?

A: Dale Schwerin (WOLGAST CORPORATION) Responded Tue Jan 28, 2025 at 02:02 pm EST
Painting Contractor is responsible for painting any piping called out to be painted.

13	Domestic Water Piping Type	Open	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/28/2025	Dale Schwerin	01/31/2025		Finnila, Shannon ...				

Q: Dale Schwerin Sent Tue Jan 28, 2025 at 02:00 pm EST
Domestic water piping – What material are we allowed to use on 2-1/2" and larger pipe?

12	Room Signage	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/27/2025	Dale Schwerin	01/30/2025	01/28/25					

Q: Dale Schwerin Sent Mon Jan 27, 2025 at 02:57 pm EST

- Please clarify required room signage locations and/or quantities (the assumption being only the new addition area)
- Are there any other existing rooms that require new room signage?

A: Shannon Finnila (INTEGRATED DESIGNS, INC) Responded Tue Jan 28, 2025 at 01:34 pm EST
Please see attached document for response.
RFI 12-Room_Signage-2025-01-27_jmk012825.pdf

11	Casework AWI Certification	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/27/2025	Dale Schwerin	01/30/2025	01/28/25					

Q: Dale Schwerin Sent Mon Jan 27, 2025 at 02:55 pm EST
Can the 064116 specifications note: "Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program" be waived or somehow modified? If not, this will exclude most local casework suppliers.

A: Shannon Finnila (INTEGRATED DESIGNS, INC) Responded Tue Jan 28, 2025 at 01:34 pm EST
Please see attached document for response.
RFI 11-Casework_AWI_Certification-2025-01-27_jmk012825.pdf

10	Wall Panels	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Schwerin, Dale (W...	01/27/2025	Dale Schwerin	01/30/2025	01/27/25					

Q: Dale Schwerin Sent Mon Jan 27, 2025 at 09:55 am EST
Regarding Bid Division 07500 Roofing, the drawings A7.1 6 indicate the wall panels are to be installed by the panel supplier. Is it safe to assume they are furnishing and installing the MP1, and the roofer will be installing the parapet cap?

Wolgast Corporation

Job #: A23906-5A Bangor Twp - 23 Bond PH 3A - Middle School
3281 Kiesel Road
Bay City, Michigan 48706
9896848121

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	A: Dale Schwerin (WOLGAST CORPORATION) Responded Mon Jan 27, 2025 at 09:57 am EST Roofer will be responsible for supplying and installing of metal panels per the Project Inclusions 3 in the Bid Division Descriptions.													
9	Patch and Repair Wall Surfaces	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Schwerin, Dale (W...	01/27/2025	Dale Schwerin	01/30/2025	01/27/25					
	Q: Dale Schwerin Sent Mon Jan 27, 2025 at 09:35 am EST Sheet A2.0, keynote 5 which trade is responsible for this note.													
	A: Dale Schwerin (WOLGAST CORPORATION) Responded Mon Jan 27, 2025 at 09:40 am EST If the wall surface is - Drywall - General Trades is Responsible. EFFIS - EFFIS Contractor is Responsible Masonry - Mason Contractor is Responsible Painting Required - Painting Contractor is Responsible Soffit Metal - Roofing Contractor is Responsible													
8	Marker Board and Locker Specifications	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/27/2025	Dale Schwerin	01/30/2025	01/28/25					
	Q: Dale Schwerin Sent Mon Jan 27, 2025 at 09:33 am EST We don't see specifications for new lockers and marker boards.													
	A: Shannon Finnila (INTEGRATED DESIGNS, INC) Responded Tue Jan 28, 2025 at 01:33 pm EST Please see attached document for response. RFI 8-Marker_Board_and_Locker_Specifications-2025-01-27_jmk012825.pdf													
7	Maintaining Existing HVAC System	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Schwerin, Dale (W...	01/27/2025	Dale Schwerin	01/30/2025	01/27/25					
	Q: Dale Schwerin Sent Mon Jan 27, 2025 at 09:22 am EST In the 23 23 00 – Plumbing & HVAC System scope of work – Division inclusions 1. Item 19 – Contractor shall maintain existing HVAC system in fully function order in occupied areas of the building throughout the duration of the project. – What does that entail? The contractor is to do preventive maintenance on the equipment, repair it if it fails. I am just look for a scope of magnitude.													
	A: Dale Schwerin (WOLGAST CORPORATION) Responded Mon Jan 27, 2025 at 09:24 am EST This is a general note that new work should not interfere with existing systems and their operation.													
6	Convector Covers to be Painted	Open	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/27/2025	Dale Schwerin	01/30/2025		Finnila, Shannon ...				
	Q: Dale Schwerin Sent Mon Jan 27, 2025 at 09:20 am EST Sheet M1.0 Area B & C – The convector covers, do these need to be removed for the painter to paint them and reinstalled after.													
5	White, Bulletin, and Chalk Board Survey	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Schwerin, Dale (W...	01/22/2025	Dale Schwerin	01/27/2025	01/22/25					
	Q: Dale Schwerin Sent Wed Jan 22, 2025 at 02:01 pm EST													

Wolgast Corporation

Printed on Wed Jan 29, 2025 at 08:19 am EST

Job #: A23906-5A Bangor Twp - 23 Bond PH 3A - Middle School
3281 Kiesel Road
Bay City, Michigan 48706
9896848121

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Could a White, Bulletin, and Chalk board Survey be provided?													
	A: Dale Schwerin (WOLGAST CORPORATION) Responded Wed Jan 22, 2025 at 02:08 pm EST See attached survey of boards. Please include adding trim for boards to retrofit locations. Bangor PH 3a MS - boards.pdf													
4	Missing Specifications	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/22/2025	Dale Schwerin	01/27/2025	01/22/25					
	Q: Dale Schwerin Sent Wed Jan 22, 2025 at 11:53 am EST The following specifications are in the table of contents but missing the specifications. - 014000 Quality Requirements - 230500 Common Work Results for HVAC													
	A: Shannon Finnila (INTEGRATED DESIGNS, INC) Responded Wed Jan 22, 2025 at 12:13 pm EST Please see attached document for response. RFI 4-Missing_Specifications-2025-01-22_IDI Response.pdf													
3	Security Film	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/22/2025	Dale Schwerin	01/27/2025	01/28/25					
	Q: Dale Schwerin Sent Wed Jan 22, 2025 at 11:32 am EST Document call for security film but no specification was given. Please advise.													
	A: Shannon Finnila (INTEGRATED DESIGNS, INC) Responded Tue Jan 28, 2025 at 01:33 pm EST Please see attached document for response. RFI 3-Security_Film-2025-01-22_jmk012825.pdf													
2	FRP Vale Doors	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Schwerin, Dale (W...	01/21/2025	Dale Schwerin	01/24/2025	01/21/25					
	Q: Dale Schwerin Sent Tue Jan 21, 2025 at 10:27 am EST Can Vale Door for the FRP door portion of this project be considered for this project.													
	A: Dale Schwerin (WOLGAST CORPORATION) Responded Tue Jan 21, 2025 at 10:29 am EST If you wish to bid Vale FRP doors, you may do so as a voluntary alternate listed on the bid form.													
1	Roof Top Gas Piping Size	Closed	WOLGAST CORPORATION	Schwerin, Dale (WOLGAST CORPORATION)	Finnila, Shannon ...	01/21/2025	Dale Schwerin	01/24/2025	01/21/25					
	Q: Dale Schwerin Sent Tue Jan 21, 2025 at 10:19 am EST Refer to attachment of drawing P2.1 (Addition Roof). Please provide pipe sizes for rooftop natural gas . Gas Piping.pdf													
	A: Shannon Finnila (INTEGRATED DESIGNS, INC) Responded Tue Jan 21, 2025 at 12:50 pm EST Please see attached document for response. RFI 1-Roof_Top_Gas_Piping_Size-2025-01-21_IDI 01.21.25.pdf													

IDI ARCHITECTURE ENGINEERING CONSULTING

ADDENDUM

1021 West Baraga Avenue,
Marquette, Michigan 49855
Phone (906) 228-4480 Fax (906) 228-7524

8571 W. Grand River Ave., Suite 600
Brighton, Michigan 48816
Phone: (810) 229-2701 Fax: (810) 229-6767

Addendum No:	1	Project Number:	22-011
Project:	Bangor Township Schools Phase 3A Middle School Projects	Date:	1/28/2025
Issued To:	Wolgast		

The contractor shall acknowledge receipt of all addenda by listing the number where indicated on the bid form.

Drawings, specifications, and / or proposals are herein amended, expanded, and / or modified, and become a part of the Contract Documents with the same effect as if incorporated in the original documents. Any contrary provisions contained, or referred to, in Drawings and / or Specifications, shall remain applicable unless overridden by this Addendum. Revised provisions herein shall include all labor, materials, methods, modifications, etc. required for the completion of the Work.

Specifications

1. Added Specifications:
   014000 Quality Requirements
   088723 Safety and Security Film
   101100 Visual Display Units
   105113 Republic Heavy Duty Corridor Lockers
   230500 Common Work Results for HVAC

2. Revised Specification:
   087100 Door Hardware

Attachments: As noted above.

END OF ADDENDUM

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:

1. Section 012100 "Allowances" for testing and inspection allowances.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of [five] previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as as indicated in-place portions of permanent construction, consisting of multiple products, assemblies, and subassemblies, with cutaways enabling inspection of concealed portions of the Work.

    a. Include each system, assembly, component, and part of the exterior wall to be constructed for the Project. Colors of components shall be those selected by the Architect for use in the Project.

2. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect or Construction Manager.

1.4 DELEGATED-DESIGN SERVICES

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 Architect.

B. Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents**.**

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:

1. Provide test specimens representative of proposed products and construction.
2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
5. Build laboratory mockups at testing facility, using personnel, products, and methods of construction indicated for the completed Work.
6. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, through Construction Manager, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect or Construction Manager.
3. Notify Architect and Construction Manager [seven] days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Construction Manager's approval of mockups before starting corresponding Work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

L. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials. Comply with requirements in "Mockups" Paragraph.

1. Coordinate construction of the mockup to allow observation of air barrier installation, flashings, air barrier integration with fenestration systems, and other portions of the building air/moisture barrier and drainage assemblies, prior to installation of veneer, cladding elements, and other components that will obscure the work.

M. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Payment for these services will be made from testing and inspection allowances specified in Section 012100 "Allowances," as authorized by Change Orders.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least [24] hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-

control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect through Construction Manager, with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and Construction Manager's and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
   a. "Metal Doors and Frames"
   b. "Flush Wood Doors"
   c. "Stile and Rail Wood Doors"
   d. "Interior Aluminum Doors and Frames"
   e. "Aluminum-Framed Entrances and Storefronts"
   f. "Stainless Steel Doors and Frames"
   g. "Special Function Doors"
   h. "Entrances"
6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule

2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
   a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
   b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
   a. Wiring Diagrams: For power, signal, and control wiring and including:
      1) Details of interface of electrified door hardware and building safety and security systems.
      2) Schematic diagram of systems that interface with electrified door hardware.
      3) Point-to-point wiring.
      4) Risers.

3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
   a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:

a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
c. Indicate complete designations of each item required for each opening, include:
    1) Door Index: door number, heading number, and Architect's hardware set number.
    2) Quantity, type, style, function, size, and finish of each hardware item.
    3) Name and manufacturer of each item.
    4) Fastenings and other pertinent information.
    5) Location of each hardware set cross-referenced to indications on Drawings.
    6) Explanation of all abbreviations, symbols, and codes contained in schedule.
    7) Mounting locations for hardware.
    8) Door and frame sizes and materials.
    9) Degree of door swing and handing.
    10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.

5. Key Schedule:
    a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
    b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
    c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
    d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
    e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
    f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:
    a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
    b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
    a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
    b. Catalog pages for each product.
    c. Final approved hardware schedule edited to reflect conditions as installed.
    d. Final keying schedule

e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
   a. Fire door assemblies, in compliance with NFPA 80.
   b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
   a. For door hardware: DHI certified AHC or DHC.
   b. Can provide installation and technical data to Architect and other related subcontractors.
   c. Can inspect and verify components are in working order upon completion of installation.
   d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:
   a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
   b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:
   a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105

b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Electrified Door Hardware
   a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

4. Accessibility Requirements:
   a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

1. Keying Conference
   a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
      1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
      2) Preliminary key system schematic diagram.
      3) Requirements for key control system.
      4) Requirements for access control.
      5) Address for delivery of keys.

2. Pre-installation Conference
   a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Inspect and discuss preparatory work performed by other trades.
   c. Inspect and discuss electrical roughing-in for electrified door hardware.
   d. Review sequence of operation for each type of electrified door hardware.
   e. Review required testing, inspecting, and certifying procedures.
   f. Review questions or concerns related to proper installation and adjustment of door hardware.

3. Electrified Hardware Coordination Conference:
   a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

1.07 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
    a. Mechanical Warranty
        1) Locks
            a) 3 years
        2) Exit Devices
            a) 3 years
        3) Closers
            a) 30 years
        4) Automatic Operators
            a) 2 years
    b. Electrical Warranty
        1) Locks
            a) 1 year
        2) Exit Devices
            a) 1 year

1.08 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."

1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.

B. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer’s recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with “Metal Doors and Frames”, “Flush Wood Doors”, “Stile and Rail Wood Doors” to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

C. Cable and Connectors:

1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.

3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Ives 5BB series

2. Acceptable Manufacturers and Products:
   a. McKinney TB series
   b. Best FBB series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
   a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
   b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
   a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. 2 inches or thicker doors:
   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins

9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.04 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Select

b. Best

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:

1. Scheduled Manufacturer and Product:
   a. Von Duprin EPT-10

2. Acceptable Manufacturers and Products:
   a. Securitron CEPT-10
   b. Security Door Controls PTM

B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Burns
   b. Rockwood

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Burns
   b. Trimco

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes, or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.08 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Schlage L9000 series

2. Acceptable Manufacturers and Products:
   a. Sargent 8200 series
   b. Best 45H series

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide indicator window measuring a minimum 2-inch x 1/2 inch with 180-degree visibility. Provide messages color-coded with full text and/or symbols, as scheduled, for easy visibility.
3. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
4. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
5. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1-inch (25 mm) throw, constructed of stainless steel.

6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide switches and sensors integrated into the locks and latches.
7. Provide motor based electrified locksets that comply with the following requirements:
    a. Universal input voltage – single chassis accepts 12 or 24VDC to allow for changes in the field without changing lock chassis.
    b. Fail Safe/Fail Secure – changing mode between electrically locked (fail safe) and electrically unlocked (fail secure) is field selectable without opening the lock case.
    c. Low maximum current draw – maximum 0.4 amps to allow for multiple locks on a single power supply.
    d. Low holding current – maximum 0.01 amps to produce minimal heat, eliminate "hot levers" in electrically locked applications, and to provide reliable operation in wood doors that provide minimal ventilation and air flow.
    e. Connections – provide quick-connect Molex system standard.

8. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.
    a. Lever Design: 06A

2.09 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
    a. Von Duprin 98/35A series

2. Acceptable Manufacturers and Products:
    a. Detex Advantex series
    b. Precision APEX 2000 series

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide smooth touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.

13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.10 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Schlage/Von Duprin PS900 Series

2. Acceptable Manufacturers and Products:
   a. Securitron BPS series
   b. Security Door Controls 600 series

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:
   a. 12/24 VDC Output, field selectable.
   b. Class 2 Rated power limited output.
   c. Universal 120-240 VAC input.
   d. Low voltage DC, regulated and filtered.
   e. Polarized connector for distribution boards.
   f. Fused primary input.
   g. AC input and DC output monitoring circuit w/LED indicators.
   h. Cover mounted AC Input indication.
   i. Tested and certified to meet UL294.
   j. NEMA 1 enclosure.
   k. Hinged cover w/lock down screws.
   l. High voltage protective cover.

2.11 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer and Product:
   a. Match Owner's existing system

2. Acceptable Manufacturers and Products:
   a. No Substitute

B. Requirements:

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

2.12 KEYING

A. Scheduled System:

1. Existing factory registered system:
   a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:
   a. Replaceable Construction Cores.
      1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
         a) 3 construction control keys
         b) 12 construction change (day) keys.
      2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2. Permanent Keying:
   a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
      1) Master Keying system as directed by the Owner.
   b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
   c. Provide keys with the following features:
      1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
      2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
   d. Identification:
      1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
      2) Identification stamping provisions must be approved by the Architect and Owner.
      3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
      4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
      5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
   e. Quantity: Furnish in the following quantities.
      1) Permanent Control Keys: 3.
      2) Master Keys: 6.
      3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
      4) Key Blanks: Quantity as determined in the keying meeting.

2.13 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. LCN 4010/4110/4020 series

2. Acceptable Manufacturers and Products:
   a. Corbin-Russwin DC8000 series
   b. Sargent 281 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. Certify surface mounted mechanical closers to meet fifteen million (15,000,000) full load cycles. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within 6-inch (152 mm) top rail without use of mounting plate so that closer is not visible through vision panel from pull side.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI/BHMA Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.14 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. LCN 4600 series

2. Acceptable Manufacturers and Products:
   a. Norton 6000 series
   b. Besam Power Swing

B. Requirements:

1. Provide low energy automatic operator units with hydraulic closer complying with ANSI/BHMA A156.19.
2. Provide automatic operator units complying with 2022 California Building Code Section 11B-404.2.9, Exception 2.

3. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
4. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
5. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.
6. Provide drop plates, brackets, and adapters for arms as required for details.
7. Provide actuator switches and receivers for operation as specified.
8. Provide weather-resistant actuators at exterior applications.
9. Provide key switches with LED's, recommended and approved by manufacturer of automatic operator as required for function described in operation description of hardware group below. Cylinders: Refer to "KEYING" article, herein.
10. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
11. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.15 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Trimco
   b. Rockwood

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.16 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Trimco
   b. Rockwood

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.

2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.17 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:
   a. Glynn-Johnson

2. Acceptable Manufacturers:
   a. Rixson
   b. ABH

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.18 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Trimco
   b. Rockwood

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.19 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Zero International

2. Acceptable Manufacturers:
   a. National Guard
   b. Legacy

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. 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.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.20 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Rockwood
   b. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.21 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Schlage

2. Acceptable Manufacturers:
   a. GE-Interlogix
   b. Sargent

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.22 DOOR VIEWERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:
   a. Auth Chimes
   b. Burns
   c. Rockwood

B. Provide appropriate door viewer for door type and rating with minimum of 180-degree view area.

2.23 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

B. FINISH: BHMA 643E/716 (US11); EXCEPT:

1. Door Closers: Powder Coat to Match.
2. Weatherstripping: Dark Bronze Anodized Aluminum.
3. Thresholds: Extruded Architectural Bronze, Oil-Rubbed

C. FINISH: BHMA 622/631 (US19); EXCEPT:

1. Door Closers: Powder Coat to Match
2. Weatherstripping: Black
3. Thresholds: Mill Finish Black

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Replace construction cores with permanent cores as indicated in keying section.
3. Furnish permanent cores to Owner for installation.

J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Connections to panel interface modules, controllers, and gateways.
6. Testing and labeling wires with Architect's opening number.

K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

M. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

P. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

   1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

HARDWARE GROUP NO. 01

HARDWARE GROUP NO. 01

For use on Door #(s):

A100 B117 D105 E100.2

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	112XY			313AN	IVE
1	EA	CONT. HINGE	112XY EPT			313AN	IVE
1	EA	POWER TRANSFER	EPT10		✓	695	VON
1	EA	PANIC HARDWARE	LD-98-EO			643E	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-NL-OP		✓	643E	VON
1	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM			643e	
1	EA	RIM CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM			643e	
2	EA	FLUSH PULL	BY DOOR/FRAME MANF.				B/O
2	EA	OH STOP	100S			643E/716	GLY
2	EA	SURFACE CLOSER	4021			695	LCN
2	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)			695	LCN
1	EA	MULLION SEAL	8780NBK PSA			BK	ZER
1	EA	THRESHOLD	655D-223			D	ZER
1	EA	CARD READER	BY OTHERS		✓	BLK	SCE
2	EA	DOOR CONTACT	679-05HM (AS REQ'D)		✓	BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS		✓	LGR	SCE

KEYED REMOVABLE MULLION BY DOOR/FRAME MANUFACTURER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

DOOR NORMALLY CLOSED AND LOCKED. PRESENTING VALID CREDENTIAL TO READER MOMENTARILY RETRACTS PANIC DEVICE LATCH ALLOWING ENTRY. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO. 02

For use on Door #(s):
B127 C111 C119

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	112XY			313AN	IVE
1	EA	CONT. HINGE	112XY EPT			313AN	IVE
1	EA	POWER TRANSFER	EPT10		✓	695	VON
1	EA	PANIC HARDWARE	LD-98-EO			643E	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-NL-OP		✓	643E	VON
1	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM			643e	
1	EA	RIM CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM			643e	
2	EA	FLUSH PULL	BY DOOR/FRAME MANF.				B/O
2	EA	OH STOP	100S			643E/716	GLY
2	EA	SURFACE CLOSER	4021			695	LCN
2	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)			695	LCN
2	EA	WALL STOP	WS443/447			643E/716	IVE
1	EA	MULLION SEAL	8780NBK PSA			BK	ZER
1	EA	THRESHOLD	655D-223			D	ZER
1	EA	CARD READER	BY OTHERS		✓	BLK	SCE
2	EA	DOOR CONTACT	679-05HM (AS REQ'D)		✓	BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS		✓	LGR	SCE

KEYED REMOVABLE MULLION BY DOOR/FRAME MANUFACTURER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

DOOR NORMALLY CLOSED AND LOCKED. PRESENTING VALID CREDENTIAL TO READER MOMENTARILY RETRACTS PANIC DEVICE LATCH ALLOWING ENTRY. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO. 03

For use on Door #(s):

A105 B115 B116 B124 E101.2 E102.2
E103.2 E104.2

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		313AN	IVE
1	EA	PANIC HARDWARE	LD-98-EO		643E	VON
1	EA	OH STOP	100S		643E/716	GLY
1	EA	SURFACE CLOSER	4021		695	LCN
1	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)		695	LCN
1	EA	THRESHOLD	655D-223		D	ZER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

HARDWARE GROUP NO. 04

For use on Door #(s):

C120.2

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY		313AN	IVE
2	EA	PANIC HARDWARE	SD-98-EO		643E	VON
3	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
2	EA	FLUSH PULL	BY DOOR/FRAME MANF.			B/O
2	EA	OH STOP	100S		643E/716	GLY
2	EA	SURFACE CLOSER	4021		695	LCN
1	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)		695	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	THRESHOLD	655D-223		D	ZER
2	EA	DOOR CONTACT	679-05HM (AS REQ'D)		BLK	SCE

KEYED REMOVABLE MULLION BY DOOR/FRAME MANUFACTURER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

HARDWARE GROUP NO. 05

For use on Door #(s):
C141

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY		313AN	IVE
2	EA	PANIC HARDWARE	CD-OUT-98-EO-WH		711	VON
3	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
2	EA	FLUSH PULL	BY DOOR/FRAME MANF.			B/O
2	EA	OH STOP	100S		643E/716	GLY
2	EA	SURFACE CLOSER	4011 ST-1544		689	LCN
2	EA	MOUNTING PLATE	4020-18 (AS REQ'D)		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	THRESHOLD	655D-223		D	ZER
2	EA	DOOR CONTACT	679-05HM (AS REQ'D)		BLK	SCE

KEYED REMOVABLE MULLION BY DOOR/FRAME MANUFACTURER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

HARDWARE GROUP NO. 06

For use on Door #(s):
C120.1

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		313AN	IVE
1	EA	CONT. HINGE	112XY EPT		313AN	IVE
1	EA	POWER TRANSFER	EPT10		695	VON
1	EA	PANIC HARDWARE	SD-98-EO		643E	VON
1	EA	ELEC PANIC HARDWARE	SD-RX-QEL-98-NL-OP		643E	VON
3	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
1	EA	RIM CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
2	EA	FLUSH PULL	BY DOOR/FRAME MANF.			B/O
2	EA	OH STOP	100S		643E/716	GLY
1	EA	SURFACE CLOSER	4021		695	LCN
1	EA	SURF. AUTO OPERATOR	4640		695	LCN
1	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)		695	LCN
1	EA	WEATHER RING	8310-802		PLA	LCN
2	EA	ACTUATOR, TOUCH	8310-852T		630	LCN
2	EA	MOUNT BOX	8310-869F			LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	THRESHOLD	655D-223		D	ZER
1	EA	CARD READER	BY OTHERS		BLK	SCE
2	EA	DOOR CONTACT	679-05HM (AS REQ'D)		BLK	SCE
1	EA	POWER SUPPLY	PS902 900-4RL		LGR	SCE

KEYED REMOVABLE MULLION BY DOOR/FRAME MANUFACTURER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

DOOR NORMALLY CLOSED AND LOCKED. EXTERIOR ACTUATOR DISABLED. PRESENTING VALID CREDENTIAL TO READER MOMENTARILY RETRACTS PANIC DEVICE LATCH AND ENABLES EXTERIOR ACTUATOR. PRESSING EXTERIOR ACTUATOR WHEN ENABLED SIGNALS AUTOMATIC OPERATOR TO OPEN DOOR. INTERIOR ACTUATOR ENABLED AT ALL TIMES. PRESSING INTERIOR ACTUATOR RETRACTS PANIC DEVICE LATCH AND SIGNALS AUTOMATIC OPERATOR TO OPEN DOOR. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO. 07

For use on Door #(s):
C117

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY EPT		313AN	IVE
1	EA	POWER TRANSFER	EPT10		695	VON
1	EA	EU MORTISE LOCK	L9092LEU 06A		643e	SCH
1	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
1	EA	OH STOP	100S		643E/716	GLY
1	EA	SURFACE CLOSER	4021		695	LCN
1	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)		695	LCN
1	EA	THRESHOLD	655D-223		D	ZER
1	EA	VIEWER	U698		B643E/716	IVE
1	EA	CARD READER	BY OTHERS		BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS		LGR	SCE

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

DOOR NORMALLY CLOSED AND LOCKED. PRESENTING VALID CREDENTIAL TO READER MOMENTARILY UNLOCKS OUTSIDE LEVER ALLOWING ENTRY. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO. 08

For use on Door #(s):
B123.1

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		313AN	IVE
1	EA	PANIC HARDWARE	LD-98-NL-OP-110MD		643E	VON
1	EA	RIM CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
1	EA	FLUSH PULL	BY DOOR/FRAME MANF.			B/O
1	EA	OH STOP	100S		643E/716	GLY
1	EA	SURFACE CLOSER	4021		695	LCN
1	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)		695	LCN
1	EA	THRESHOLD	655D-223		D	ZER
1	EA	DOOR CONTACT	679-05HM (AS REQ'D)		BLK	SCE

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

HARDWARE GROUP NO. 09

For use on Door #(s):
A108 B111

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		313AN	IVE
1	EA	STOREROOM LOCK	L9080L 06A		643e	SCH
1	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		643e	
1	EA	OH STOP	100S		643E/716	GLY
1	EA	SURFACE CLOSER	4021		695	LCN
1	EA	TJ MOUNTING PLATE	4020-18G (AS REQ'D)		695	LCN
1	EA	THRESHOLD	655D-223		D	ZER

PERIMETER SEALS & SWEEP BY DOOR/FRAME MANUFACTURER

HARDWARE GROUP NO. 10

For use on Door #(s):
E101.1 E102.1 E103.1 E104.1

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	OFFICE W/SIM RETRACT W/ INSIDE INDICATOR	L9056L 06A 09-544 IS-LOC XL13-439		626	SCH
1	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		626	
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS33/WS33X		626	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

HARDWARE GROUP NO. 11

For use on Door #(s):
E101.3

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	L9080L 06A		626	SCH
1	EA	MORTISE CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		626	
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4011 ST-1544		689	LCN
1	EA	MOUNTING PLATE	4020-18 (AS REQ'D)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

HARDWARE GROUP NO. 12

For use on Door #(s):
B110 E100.1

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	224XY		628	IVE
2	EA	FIRE EXIT HARDWARE	9849-EO-F-LBLAFL		626	VON
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
2	EA	FIRE/LIFE WALL MAGNET	SEM7800 SERIES		689	LCN
1	EA	GASKETING	488SBK PSA		BK	ZER
2	EA	MEETING STILE SEAL	8194AA		AA	ZER
1	SET	FIRE ALARM CONTACTS	PROVIDED BY FIRE ALARM CONTRACTOR			B/O

HARDWARE GROUP NO. 13

For use on Door #(s):
B123.2

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	FIRE EXIT HARDWARE	98-L-NL-F-06		626	VON
1	EA	RIM CYLINDER/PERMANENT CORE	MATCH OWNER'S EXISTING SYSTEM		626	
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS33/WS33X		626	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

END OF SECTION

SECTION 088723

SAFETY AND SECURITY FILM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Safety and Security film field applied to existing glass.

1.2 REFERENCES

A. LBNL WINDOW SOFTWARE - A computer program for calculating total window thermal performance indices (i.e. U-values, solar heat gain coefficients, and visible transmittances).

B. NFRC 100/200 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

C. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

D. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

E. ASTM D4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.

F. ASTM D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.

G. ASTM D1044 - Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).

H. ASTM D1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics

I. ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.

J. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

K. Consumer Products Safety Commission (CFR): 16 CFR, Part 1201 - Safety Standard for Architectural Glazing Materials.

L. United States General Services Administration (GSA): GSA-TS01-2003 - Standard Test for Glazing and Glazing Systems Subject to Airblast Loadings.

1.3 PERFORMANCE REQUIREMENTS

A. Safety Glazing Impact Performance:
   1. Meets ANSI Z97.1 Class B and 16 CFR 1201 Category I 150 ft-lbs impact resistance
   2. Meets accelerated weathering requirements in accordance with ANSI Z97.1

B. Blast Mitigation Performance: Independent test results when tested in accordance with GSA
   1. GSA TS-01-2003, GSA Performance Condition with a minimum blast pressure of 4 psi-28 psi-msec when applied as a daylight application on 1/4 inch (6 mm) single pane annealed glass: 3B.
   2. GSA TS-01-2003, GSA Performance Condition with a minimum blast pressure of 4 psi-28 psi-msec when applied with GE SCS2000 Silpruf on 1/4 inch (6 mm) single pane annealed glass: 3B.
   3. GSA TS-01-2003, GSA Performance Condition with a minimum blast pressure of 4 psi-28 psi-msec when applied as a daylight application on 1/4 inch (6 mm) double pane annealed glass: 3A.

C. Flammability: Meets surface burning characteristics in accordance with ASTM E-84 Class A
   1. Flame Spread Index = < 25
   2. Smoke Development Index = < 450

D. Volatile Organic Compound Content:
   1. Compliant with the performance standard established for low-emitting materials under the CDPH, the Collaborative for High Performance Schools (CHPS) and the LEED v4 programs.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Manufacturer's data sheets on each product to be used.

C. Shop Drawings: Detailing installation of film, anchoring accessories, and sealant.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Manufacturer's warranty information.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Products specified shall be a standard product of a manufacturer regularly engaged in the manufacturing and distribution of such products for a minimum of 10 years.
   1. Provide a Quality Management certificate stating the manufacturing facility’s location conformance with ISO 9001
   2. Provide an Environmental Management certificate stating the manufacturing facility’s location conformance with ISO 14001

B. Installer Qualifications: Documented experience in the application of self-adhesive window films with at least 3 applications of similar size and complexity, and approved by the window film manufacturer.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Apply film and wet glaze (if required) to one window designated by Architect.
   2. Do not proceed with remaining work until workmanship and color, is approved by Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products indoors in manufacturer's unopened packaging until ready for installation.

B. Dispose of any hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Provide film manufacturer's limited warranty against failure of film, including change of color, peeling, bubbling, rippling, cracking, delamination and demetallization; includes cost of material and labor for removal and reinstallation. Duration of warranty shall be as follows:
   1. Twelve (12) Year Limited Warranty for the following safety and security film products:

      a. Solar Gard Armorcoat Clear

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Solar Gard®, which is located at: 4540 View Ridge Ave. ; San Diego, CA 92123; Toll Free Tel: 866-572-1922; Tel: 858-576-0200; Email:info@solargard.com; Web:www.solargard.com

2.2 SAFETY AND SECURITY FILM

A. Solar Gard Armorcoat 14-mil (350 micron) Optically clear safety film with pressure sensitive adhesive and abrasive resistant coating shall have the following nominal properties when applied to 1/4 inch (6 mm) clear glass
   1. Film Performance Results, Nominal

      a. Film Color: Clear
      b. Visible Light Transmittance: 87 percent
      c. Visible Light Reflectance: (Exterior) 10 percent
      d. Visible Light Reflectance: (Interior) 10 percent
      e. Total Solar Energy Rejected: 22 percent
      f. Solar Heat Gain Coefficient: .78
      g. U-Factor Btu/h-ft² F (Winter): 1.03
      h. Solar Transmittance: 77 percent
      i. Solar Absorptance: 20 percent
      j. Solar Reflectance: 8 percent
      k. Ultraviolet Light Blocked (300-380 nanometers): > 99 percent
      l. UV Tdw-ISO @ 300 to 700 nm: 62 percent

   2. Physical and Thermal Properties, Nominal

      a. Film Thickness: 14-mil (350 micron)
      b. ASTM D-1003 Abrasion Resistance: < 5%

PART 3 EXECUTION

3.1 EXAMINATION

A. If the substrate preparation is the responsibility of another installer, notify the Architect or Project Leader of unsatisfactory preparation before proceeding.

B. Glass surfaces should be inspected for defects including scratches or defects which will

affect the final appearance.

C. Do not begin installation until substrates have been properly prepared.

D. If substrate preparation is the responsibility of another installer, notify Architect or Project Leader of unsatisfactory preparation before proceeding.

E. If the application of a wet glaze attachment system is required, verify that the window film installation has met the manufacturers recommended guidelines and has passed visual inspection by the Architect or Project Leader.
   1. An adhesion test may be conducted to the frame surface to verify compatibility. Adhesion test typically involves the application of a 1-inch-wide by 6-inch-length bead. Bead is allowed to cure for a minimum 7 days. The applied bead is removed at a 90-degree angle. The result should be cohesive failure meaning a portion of the product remains on the surface. If adhesion fails, seek the advice of the manufacturer.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. If the application of a wet glaze attachment system is required, refer to manufacturers instruction for surface preparation.

3.3 FILM INSTALLATION

A. Install in accordance with manufacturer's instructions. Installation must be accomplished by a recognized professional installer of film for solar control or safety and security purposes. Completed work must meet IWFA visual acceptance standard.

B. Install without bubbles, ripples, drips, dirt, cuts, tears or gaps between film and frame.

C. Clean newly installed film and window frames after installation.

D. Clean up cleaning solutions, run-off cleaning water and adhesive mounting solution.

3.4 WET GLAZE INSTALLATION

A. The wet glaze attachment system shall be applied according to the guidelines of the Manufacturer by an Authorized Dealer/Applicator. For guidance on the installation of wet glaze attachments, please review Solar Gard tech bulletin document PDF0258.

B. For impact resistance or glass retention purposes, a minimum 3/8-inch overlap on film and frame (excluding glazing stops) or 1/4-inch depth at bead center.

C. Open cell backer rod may be used to fill the void when gaskets are removed. Alternatively, existing gaskets may be cut back with Architect or Project Leader approval. For this application, it is recommended to perform a compatibility test with the wet glaze. This can be requested through the manufacture of the wet glaze product.

D. In some instances, the area to be wet glazed may be masked and a tooling knife used to smooth the applied bead to required size. To maximize bead depth, the applied bead should have a triangular profile shape. A concave shape bead may be acceptable with proper bead depth at center based on requirements. All tapes used to mask the area should be removed within the working time of the sealant outlined in the product data sheet.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Where installed film could be damaged by subsequent construction provide tape warning strips or barricades to prevent contact.

END OF SECTION

SECTION 101100
VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Section Includes:

1. Porcelain Enamel Steel Markerboards
2. Tack boards and strips

1.2 REFERENCED STANDARDS

A. American Society for Testing Materials

1. ASTM B221Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles and Tubes.
2. ANSI Z97.1 Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test
3. ASTM E84 Standard Test Method for Surface Burning Characteristics for Building Materials
4. ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wires, Profiles and Tubes

B. Porcelain Enamel Institute

1. PEI-1002 Manual and Performance Specifications for Porcelain Enamel Writing Surfaces

1.3 SUBMITTALS

A. Shop Drawings: Provide shop drawings for each visual display board required.

B. Product Data: Provide technical data for materials specified. Include Material Safety Data Sheets, when applicable.

C. Samples and color charts: Provide Manufacturer's color charts and composition samples of face, core, backing and trim to illustrate finish, color and texture, where required.

D. Manufacturer’s Instructions: Provide Manufacturer’s installation and cleaning instructions.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Manufacturer shall be a firm engaged in the manufacture of visual display boards in the United States.
2. Manufacturer shall have a minimum of 5 years’ experience in the manufacture of visual display boards.

B. Regulatory Requirements: Conforms to applicable code for flame/smoke rating in tackboards in accordance with ASTM E84.

C. Operation and Maintenance: Include data on regular cleaning, stain removal, and precautions.

1.5 PROJECT CONDITIONS

A. Field measure prior to preparation of shop drawings and fabrication to ensure proper fit.

B. Comply with manufacturer’s recommendations for acclimatizing area for interior moisture and temperature to approximate normal occupied conditions.

1.6 DELIVERY, STORAGE AND HANDLING

A. Schedule delivery of visual display boards with spaces sufficiently complete so that visual display boards can be installed upon delivery.

B. Store products in manufacturer’s unopened packaging until ready for installation.

C. Store materials protected from exposure to harmful weather conditions and at temperatures and humidity conditions recommended by manufacturer.

1.7 WARRANTY

A. Submit a “Life of the Building” warranty, stating that under normal usage and maintenance, and when installed in accordance with manufacturer’s instructions and recommendations, porcelain enamel steel markerboard writing surfaces are guaranteed for the Life of the Building. Guarantee covers replacement of defective boards but does not include cost of removal or reinstallation.

B. Submit a standard warranty, stating that when installed in accordance with manufacturer’s instructions and recommendations, tackboards are guaranteed for one year against defects in materials and workmanship. Guarantee does not cover normal wear and tear, improper handling, any misuse, or any defects caused by vandalism or subsequent abuse. Guarantee covers replacement of defective material but does not include cost of removal or reinstallation.

C. Submit a standard warranty, stating that under normal usage and maintenance, and when installed in accordance with manufacturer's instructions and recommendations, Manufacturer glass marker wall writing surfaces are guaranteed for 10 years. Guarantee covers replacement of defective boards but does not include cost of removal or reinstallation.

D. Writing Surface Warranty Period: 10 years commencing on Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Claridge Products and Equipment, Inc.
B. Koraseal
C. Magnatag Visible Systems
D. PolyVision Corporation

2.2 MATERIALS

A. Writing Surface Face Sheet – Manufactured in accordance with Porcelain Enamel Institute's specification.

1. Shall be enameling grade cold rolled steel manufactured from a minimum of 30 percent post-consumer and post-industrial waste.

2. Enameling grade steel shall be coated with LCS³ Porcelain Enamel by Claridge Products and Equipment.

a. 3-Coat process shall include:
1) Bottom Ground Coat – 1.5 to 2.2 mils
2) Top Ground Coat – 2.0 to 2.8 mils
3) Top Cover (Color) Coat – 3.0 to 4.0 mils

3. Firing Temperature: Enamel shall be fired at lowest possible temperatures to reduce steel and porcelain stresses and achieve superior enamel and hardness.

4. Color: As selected by architect from manufacturer's standards.

B. Writing Surface Core 1. 7/16" Medium Density Fiberboard (MDF) composed of approximately 90% postindustrial waste.

C. Writing Surface Backing 1. Moisture Barrier Back 2. Foil Back 3. Aluminum Sheet Back 4. Steel Back

D. Factory Framed Markerboards and Chalkboards

1. Face Sheet: (Specify LCS³ porcelain enamel steel Markerboard; or porcelain enamel steel Chalkboard)
2. Core Material: (Specify 7/16" MDF)
3. Backing: (Specify Moisture Barrier Back; Foil Back; Aluminum Sheet Back; or Steel Back)
4. Series: (Specify Series 1, 3, 4, 5, 8, or 185)
5. Markerboard with Tackboard Top Trim, refer to drawings.
6. Panel Size: refer to drawings.
7. Color: as selected from manufacturer's standard colors.

2.3 ALUMINUM TRIM

A. Trim shall be 6063 alloy grade aluminum with T5 tempering in accordance with ASTM B221, and shall have 201-R1 satin anodize finish. (Color Anodize and Powder Coat finishes optional)

1. Factory Built Trim Series: (Series 1)
2. Marker Tray/Chalktrough

a. Continuous, hollow aluminum tray with cast aluminum end closures at bottom of each markerboard or chalkboard
b. Continuous 2" map rail with cork insert and end stops at the top of each markerboard and chalkboard
c. Map Hooks: (Two map hooks furnished for map rail on factory-framed units)

2.4 PROJECT CONDITIONS

A. Verify before installation that interior moisture and temperature approximate normal occupied conditions.

B. Verify that wall surfaces are prepared and ready to receive panels.

2.5 INSTALLATION

A. Deliver factory built units completely assembled and of dimensions shown in details and in accordance with manufacturers shop drawings as approved by the architect.

B. Deliver in accordance with manufacturer’s shop drawings as approved by the architect.

C. Follow manufacturer’s instructions for storage and handling of units before installation.

D. Do not install on damp walls or in damp and humid weather without heat in the building.

E. Install level and plumb, keeping perimeter trim straight in accordance with manufacturer’s recommendations.

2.6 ADJUST AND CLEAN

A. Verify that all accessories are installed as required for each unit.

B. At completion of work, clean surfaces and trim in accordance with manufacturer’s recommendations, leaving all materials ready for use.

END OF SECTION

SECTION 105113
HEAVY-DUTY CORRIDOR LOCKER SPECIFICATIONS

PART 1- GENERAL

1.1 SCOPE: Furnish and install new steel lockers, accessories and finish metal trim as shown or indicated on approved drawings.

1.2.1 SUBMITTALS:
Shop Drawings: Submit drawings showing locker types, sizes and quantities, including all necessary details relating to anchoring, trim installation and relationship to adjacent surfaces.
Numbering: The locker numbering sequence shall be provided by the approving authority and noted on approved drawings returned to the locker contractor.
Color Charts: Provide color charts showing manufacturer's available colors. If required by normal office procedures or in the event of non-standard color selection, request samples of paint on metal.
Lock Combination Listings and Master Keys: Use only when combination locks are specified. Delivered directly to the owner's representative.

1.3 QUALITY ASSURANCE:

1.3.1 UNIFORMITY: Provide each type of metal locker as produced by a single manufacturer, including necessary accessories, fittings and fasteners.

1.3.2 JOB CONDITIONS: Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage during delivery, handling, storage and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURER:
Republic Storage Products, LLC.

2.2 LOCKERS:
Corridor Locker Style: HDC
Refer to drawings for size and configuration.
Color: As selected from MFR standards.

2.3 FABRICATION:

2.3.1 MATERIAL: All major steel parts shall be made of mild cold rolled steel, free from imperfections and capable of taking a high grade enamel or powder coat finish.

2.3.2 FINISH: Surfaces of the steel shall be thoroughly cleaned, phosphatized and prepared for baked enamel or powder coat finish in accordance with paint manufacturer’s instructions.

2.3.3 CONSTRUCTION: Lockers shall be built on the unit principle - each locker shall have an individual door and frame, an individual top, bottom, back and shelves with common intermediate uprights separating units.

2.3.4 DOOR FRAMES: Door frames shall be 16 gauge formed into 1" wide face channel shapes with a continuous vertical door strike integral with the frame on both sides of the door opening.

2.3.5 DOORS: Doors shall be 14 gauge formed with a full channel shape on lock side to fully conceal the lock bar, channel formation on the hinge side and right angle formation across the top and bottom. Doors shall be of flush design without louvers or perforations. The top and bottom flanges of all doors shall be perforated for ventilation with Republic's Verti-Vent System.

SECTION 105113
HEAVY-DUTY CORRIDOR LOCKER SPECIFICATIONS

2.3.6 PRE-LOCKING DEVICE: All "tiered" lockers shall be equipped with a positive automatic pre-locking device whereby the locker may be locked while door is open and then closed without unlocking and without damaging locking mechanism.

2.3.7 LATCHING: Latching shall be a one-piece, pre-lubricated spring steel latch, completely contained within the lock bar under tension to provide rattle-free operation. The lock bar shall be of pre-coated, double-channel steel construction. The lock bar shall be securely contained in the door channel by self-lubricating, polyethylene guides that isolate the lock bar from metal to metal contact with the door. There shall be three latching points for lockers over 42" in height and two latching points for all tiered lockers 42" and under in height. The lock bar travel is limited by contacting resilient high-quality elastomeric cushioning devices concealed inside the lock bar. Frame hooks to accept latching shall be of heavy gauge steel, set close in and welded to the door frame. Continuous vertical door strike shall protect frame hooks from door slam damage. A soft rubber silencer shall be securely installed on each frame hook to absorb the impact caused by closing of the door.

2.3.8 HANDLES: A non-protruding 14 gauge, lifting trigger and slide plate shall transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel recessed pocket. This stainless steel pocket shall contain a recessed area for the various lock types available and a mounting area for the number plate.

2.3.8 INTEGRAL COMBINATION LOCK: Masterlock Built-In Combination Lock.

2.3.9 HINGES: Continuous Hinges – Manufacturer’s Standard, steel, full height.

2.3.10 BODY: The body of the locker shall consist of 24 gauge upright sheets, backs, tops, bottoms and shelves. Tops, bottoms and shelves are flanged on all four sides; backs are flanged on two sides. Uprights shall be offset at the front and flanged at the rear to provide a double lapped rear corner.

2.3.11 INTERIOR EQUIPMENT: Single tier lockers over 42" high shall have one hat/book shelf. Other tiered lockers do not require shelves. All single, double and triple tier lockers shall have one double prong back hook (single prong in 9" width) and two single prong wall hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets. Locker openings under 20" high are not equipped with hooks.

2.3.12 NUMBER PLATES: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2" high. Plates shall be attached with rivets to the lower surface within the recessed handle pocket.

2.3.13 COLOR: Doors and exposed body parts shall be finished in colors selected from Republic's collection of twenty-five baked enamel colors. Non-exposed body parts shall be finished in #23 Classic Tan (baked enamel).

2.3.14 ASSEMBLY: Assembly of all locker components shall be accomplished by the use of zinc plated, low round head, slotless, fin neck machine screws with Keps nuts, producing a strong mechanical connection.

2.3.15 ACCESSIBLE LOCKERS:

1. Provide 5% of total of each locker type as ADA lockers (not less than 1 per type or area).
2. Fabricate as follows:
   a. Locate bottom shelf no lower than 15 inches above the floor.
   b. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.
   c. International Symbol of Accessibility (ISA) attached to door.

2.3.16 Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.

2.3.17 Recess Trim: Fabricated with minimum 2-1/2-inch face width and in lengths as long as practical; finished to match lockers.

2.3.18 Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.

2.3.19 Boxed End Panels: Fabricated with 1-inch- wide edge dimension, and designed for concealing fasteners and holes at exposed ends of non-recessed metal lockers; finished to match lockers.

2.3.20 Finished End Panels: Fabricated to conceal unused penetrations and fasteners, except for perimeter fasteners, at exposed ends of non-recessed metal lockers; finished to match lockers.

PART 3 - EXECUTION

3.1 INSTALLATION: Lockers must be installed in accordance with manufacturer's approved drawings and assembly instructions. Installation shall be level and plumb with flush surfaces and rigid attachment to anchoring surfaces.
Space fasteners at 36" O.C. or less as recommended by manufacturer. Use fasteners appropriate to load and anchoring substratum. Use reinforcing plates wherever fasteners could distort metal.
Various trim accessories where shown such as sloping tops, fillers, bases, recess trim, etc., shall be installed using concealed fasteners. Flush, hairline joints shall be provided at all abutting trim parts and at adjoining surfaces.

3.2 ADJUSTMENT: Upon completion of installation, inspect lockers and adjust as necessary for proper door and locking mechanism operation.

3.3 QUALITY ASSURANCE: Republic reserves the right to modify the design and/or change specifications or colors/finish consistent with our policy of product excellence.

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section covers basic materials and methods which may be common to two or more subsequent sections.

1.2 QUALITY ASSURANCE

A. Chemical and physical properties of all materials, design, performance characteristics and methods of construction of all items of equipment shall be in accordance with the following applicable regulations, references, and standards of current editions in effect 30 days prior to receipt of bids:

1. American Society of Heating, Refrigerating, Air Conditioning Engineers (ASHRAE)
2. American Society of Mechanical Engineers (ASME).
3. American Society for Testing and Materials (ASTM).
4. Factory Mutual Laboratories (FM).
5. National Electrical Manufacturer's Association (NEMA).
6. National Fire Protection Association (NFPA).
7. Plumbing and Drainage Institute (PDI).
8. Underwriters' Laboratories, Inc. (UL).
9. American National Standards Institute (ANSI).

B. All work, materials and equipment shall comply with the rules and regulations of all codes and ordinances of the local, state, and federal authorities. Such codes, where applicable, shall take precedence over these drawings and specifications.

C. All castings used for coupling housings, fittings, and valve bodies shall be date stamped for quality assurance and traceability.

1.3 MATERIALS AND MANUFACTURERS

A. Unless otherwise noted all materials and equipment shall be new, free of defects, installed in accordance with manufacturer's current published recommendations in a neat manner and in accordance with standard practice of the industry.

B. Certain materials and/or equipment in this specification are specified by manufacturer and catalog numbers. The design was based on the specified equipment and establishes a degree of quality, performance, physical configuration, etc. If the Contractor should elect to use equipment other than the equipment used as a basis for design but listed as "acceptable" in the Specifications, Contractor shall be responsible for space requirements, configuration, performance, and changes in, bases, supports, vibration isolators, structural members, openings in structure and other apparatus that may be affected by its use.

C. Contractor further agrees that if deviations, discrepancies, or conflicts between reviewed submittals and shop drawings, and the Contract Documents in the form of design drawings and specifications are discovered after submittals and/or shop drawings are processed by

the Architect/Engineer, the design drawings and specifications shall control and shall be followed at no additional cost to Owner or Engineer.

1.4 SUBSTITUTION APPROVALS

A. Equipment and/or materials manufactured by any one of the manufacturers listed in this specification or on the drawings shall be acceptable.

B. Where no specific manufacturer is listed, a first-class item of cataloged manufacturer shall be furnished.

C. Where specifications list a manufacturer and then state, ‘or approved equal,’ it shall be the contractor’s responsibility to obtain in writing the Engineer’s approval of the proposed ‘equal’ product prior to bids. Contractor shall not simply assume a product will be approved ‘as equal’ based on supplier representatives’ verbal statements.

1.5 QUIET OPERATION AND VIBRATION

A. All mechanical equipment provided under this contract shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Architect/Engineer. In case of moving machinery, sound, or vibration noticeable outside of its own room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable by the Architect/Engineer shall be corrected in an approved manner by the Contractor at his expense. Vibration control shall be by means of approved vibration eliminators in a manner as recommended by the manufacturer of the eliminators.

1.6 PERMITS AND INSPECTIONS

A. Mechanical contractor shall file for, pay all fees, and obtain all applicable mechanical and other permits required to receive approvals for occupancy and use of the premises.

B. Contractor shall call for, and ascertain, all inspections are completed and approvals obtained for the work prior to submitting an application for final payment.

PART 2 - PRODUCTS

2.1 VALVES

A. All valves, except as otherwise specified in detail specifications, shall be of one manufacturer: Victaulic, Apollo, Milwaukee Valve, Crane, Kennedy, Jenkins, Hammond, Powell, or Nibco (gate valves - block pattern) and are to be manufactured in accordance with the Manufacturer's Standardization Society of the Valves and Fittings Industry Standards wherever applicable.

B. Ball valves shall be used in lieu of gate valves wherever the pressure and temperature ratings of same are satisfactory for the intended service and valve can be operated easily from floor or platform.

C. Listed manufacturer's numbers in detailed specifications are for cross reference purposes

D. ASME Compliance:

1. ASME B1.20.1 for threads for threaded-end valves.
2. ASME B16.1 for flanges on iron valves.
3. ASME B16.5 for flanges on steel valves.
4. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
5. ASME B16.18 for solder-joint connections.
6. ASME B31.1 for power piping valves.
7. ASME B31.9 for building services piping valves.

E. Ball Valves:

1. NPS 2 and Smaller:

a. Brass (Dezincification Resistant Brass Alloy, Lead-Free):

1. Standard: MSS SP-110.
2. SWP Rating: 150 psig.
3. CWP Rating: 600 psig, non-shock.
4. Body Design: Two piece.
5. Body material: Forged brass.
6. Ends: Threaded or solder.
7. Seats: PTFE.
8. Stem: Brass, blow-out proof.
9. Ball: T.E.A. (ternary eco alloy) coated brass.
10. Port: Full.

2. NPS 2-1/2 and Larger:

a. Iron, Class 125:

1. Standard: MSS SP-72.
2. CWP Rating: 200 psig, non-shock.
3. Body Design: Split body.
4. Body material: ASTM A126, gray iron.
5. Ends: Flanged.
6. Seats: PTFE.
7. Stem: Stainless steel, blow-out proof.
8. Ball: Stainless steel.
9. Port: Full.

b. Steel, Class 150

1. Standard: MSS SP-72.
2. CWP Rating: 285 psig, non-shock.
3. Body Design: Split body.
4. Body material: Carbon steel, ASTM A216, Type WCB.
5. Ends: Flanged.
6. Seats: PTFE.

7. Stem: Stainless steel, blow-out proof.
8. Ball: Stainless steel, vented.
9. Port: Full.

F. Butterfly Valves:

1. NPS 2-1/2 and Larger

a. Iron, Single-Flange with Ductile-Iron Disc:

1. Standard: MSS SP-67.
2. CWP Rating: 200 psig, non-shock.
3. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
4. Body material: ASTM A126, cast iron or ASTM A536 ductile iron.
5. Seats: EPDM.
6. Stem: One-or two-piece stainless steel.
7. Disc: Nickel-plated or -coated ductile iron.

b. Iron, Grooved-End:

1. Standard: MSS SP-67, Type 1.
2. CWP Rating: 175 psig, non-shock.
3. Body material: Coated, ductile iron.
4. Stem: Two-piece stainless steel.
5. Disc: Coated, ductile iron.
6. Seal: EPDM.

c. Single-Flange, High-Performance, Class 150 (Steam applications):

1. Standard: MSS SP-68.
2. CWP Rating: 1285 psig at 100 deg F.
3. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
4. Body material: Carbon steel, cast iron, ductile iron, or stainless steel.
5. Seat: Reinforced PTFE or metal.
6. Stem: Stainless steel, offset from seat plane.
7. Disc: Carbon steel.
8. Service: Bidirectional.

G. Recirculation System Balancing Valves:

1. One piece non-ferrous brass/bronze flow measuring and balancing shut-off valve combination rated to 150 psig. Flow element shall be a low loss/high signal Venturi or orifice meter equipped with pressure and temperature test ports and caps. Valve shall be ball type with Teflon seats and blow-out-proof stem with Teflon packing. Valves shall provide positive shut-off, memory stop, and union, equal to Circuit Setter by Bell & Gossett.

H. Swing Check Valves:

1. NPS 2 and Smaller:

a. Bronze with Bronze Disc, Class 125:

1. Standard: MSS SP-80, Type 3.
2. CWP Rating: 200 psig.
3. Body Design: Horizontal flow.
4. Body Material: ASTM B62, bronze.
5. Ends: Threaded or solder.

2. NPS 2-1/2 and Larger:

a. Iron with Metal Seat, Class 125:

1. Standard: MSS SP-71, Type 1.
2. CWP Rating: 200 psig, non-shock.
3. Body Design: Clear or full waterway.
4. Body Material: ASTM A126, gray iron with bolted bonnet.
5. Ends: Flanged.
6. Trim: Bronze.
7. Gasket: Asbestos free.

b. Iron with Metal Seat, Grooved-End:

1. CWP Rating: 300 psig, non-shock.
2. Body material: ASTM A536, ductile iron.
3. Seal: EPDM.
4. Disc: Spring-operated, ductile iron or stainless steel.
5. Can be installed vertically (flow upwards only) or horizontally.
6. Victaulic series 716.

c. Iron, Dual-Plate with Metal Seat, Class 125, Grooved-End:

1. Standard: API 594.
2. CWP Rating: 200 psig, non-shock.
3. Body Design: Wafer, spring-loaded plates.
4. Body Material: ASTM A126, gray iron.
5. Seat: Bronze
6. Victaulic series W715.

d. Iron, with Lever- and Spring-Closure Control, Class 125:

1. Standard: MSS SP-71, Type 1.
2. CWP Rating: 200 psig, non-shock.
3. Body Design: Clear or full waterway.
4. Body Material: ASTM A126, gray iron with bolted bonnet.
5. Ends: Flanged.
6. Trim: Bronze:
7. Gasket: Asbestos free.
8. Closure control: Factory-installed, exterior lever and spring.

e. Iron, Compact-Wafer, Center-Guided with Metal Seat, Class 125:

1. Standard: MSS SP-125.
2. CWP Rating: 200 psig, non-shock.
3. Body Material: ASTM A126, gray iron.
4. Ends: Flanged.
5. Style: Compact wafer.
6. Seat: Bronze:

3. Class 150 valves meeting the above specifications may be used where system pressure requires.
4. Alternative check valves (2½" and larger) shall be class 125/250 iron body, bronze mounted, wafer check valve, with ends designed for flanged type connection, aluminum bronze disc, EPDM seats, 316 stainless steel torsion spring, and hinge pin.
5. A spring-actuated check valve is to be used on pump discharge. Swing check with outside lever and spring (not center guided) is to be used on sewage ejectors or storm-water sump pumps.

I. Valves in insulated piping shall include a 2-inch stem extension, extended operating handle of nonthermal-conductive material and protective sleeves that allow operation of valves without breaking the vapor seals or disturbing insulation, and memory stops that are fully adjustable after insulation is applied.

2.2 HANGERS AND SUPPORTS

A. Pipe hangers shall be manufactured of the same material as the pipe or be non-corrosive to the piping system to which it serves.

B. Multiple pipe runs may be supported on trapeze hangers. Trapeze shall be Unistrut P-100. Hanger rods shall be one size larger than size specified herein for largest pipe on trapeze. Where trapeze lengths exceed 42", additional hanger rod shall be installed at midspan.

C. Except where governed by local codes, maximum hanger spacing and minimum hanger rod sizes shall conform to the following table:

	Pipe Size	Spacing	Hanger Rod
Copper Pipe	1/2"	6'-0"	3/8"
	3/4" thru 1"	8'-0"	3/8"
Plastic Pipe	1-1/4", 1-1/2"	4'-0"	3/8"
(PVC)	2"	5'-0"	3/8"

2.3 THERMOMETERS

A. Approved manufacturers are Duro Instrument Corp., Miljoco, and H.O. Trerice Co.

B. Thermometers shall have cast aluminum case with baked enamel finish; red reading tube with suitable 9" scale; adjustable multi-angle housing, and brass separable socket.

2.4 PRESSURE GAUGES

A. Approved manufacturers are Duro Instrument Corp., Miljoco, H.O. Trerice Co., and Ametek U.S. Gauge Division.

B. Pressure gauges sall have phenolic turret case, 4-1/2” dial with suitable range, phosphorous bronze Bourdon tube, corrosion-resistant movement, adjustable stainless steel pointer, 1% of full scale accuracy, and 1/4" NPT brass connection.

C. Furnish the following with each pressure gauge: 1/4" brass needle valve (Hammond IB415), pressure snubber (Ray Model 1).

2.5 ELECTRICAL EQUIPMENT

A. All electrical equipment shall conform to the electrical specifications and shall be suitable for operation on the voltage and phase available at the building site. These characteristics shall be verified by the Contractor prior to ordering equipment.

B. Provide motors as required for proper operation of all equipment furnished under this Division.

1. Minimum motor horsepower ratings are specified or scheduled on the drawings. Minimum requirements for all motors are as follows:

2.6 Constructed for operation at work site altitude and surrounding temperature.
2.7 Dustproof/leakproof bearing rings.
2.8 Built to NEMA standards.
2.9 Factory balanced.
2.10 Open drip proof unless noted otherwise.
2.11 Integral thermal overload protection.

C. When not specifically noted under Division 26 or electrical drawings, provide the following:

1. Furnish all necessary control devices such as speed controls, transformers and relays as required for proper operation of all equipment furnished under this Division.
2. Furnish identification as to purpose for each switch and/or pushbutton station furnished herein. Identification may be either engraved plastic sign or permanent mounting to wall below switch, or stamping on switch cover proper. All such identification signs and/or switch covers in finished areas shall match other hardware in the immediate area.

PART 3 - EXECUTION

3.1 DELIVERY AND STORAGE OF MATERIALS

A. Make provisions for the delivery and safe storage of materials and make the required arrangements with other contractors for the introduction into the building of equipment too large to pass through finished openings.

3.2 PIPE AND FITTINGS

A. Piping is to be installed as shown on the drawings insofar as practical. When a pipe size is not indicated the subcontractor shall request the pipe size from the Architect/Engineer through the general contractor.

B. Provide sufficient swing joints, anchors, expansion loops, and/or devices necessary and install to permit free expansion and contraction without causing undue stresses. Make all changes in direction with fittings. Support piping independently at all equipment so that its weight shall not be supported by the equipment.

C. For water systems, Victaulic flexible couplings may be used on header piping to accommodate thermal growth and contraction, and for the elimination of expansion loops (as approved by the engineer). Where loops are required, use flexible-type couplings on the loops.

D. Install piping without springing or forcing and clear all windows, doors, and other openings. Excessive cutting or other weakening of the building structure to facilitate piping installation will not be permitted.

E. All pipe shall be reamed to full pipe diameter before joining.

F. Install vertical risers plumb and straight, horizontal lines parallel with walls and partitions.

G. Provide shut-off valves and unions suitably located to isolate each item of equipment, branch circuit or section of piping.

H. Unions and flanges for servicing and disconnect are not required in installations using grooved joint couplings. (The couplings shall serve as disconnect points.)

I. Provide 1/2" drain valves at all low points of each system to enable complete drainage.

J. Provide dielectric unions or waterway fittings at all junctions of dissimilar metals in fresh water systems.

K. Grooved joint shall be installed in accordance with the manufacturer’s written recommendations. Grooved ends shall be clean and free from indentations, projections, or roll marks. The gasket shall be molded and produced by the coupling manufacturer of an elastomer suitable for the intended service. The coupling manufacturer’s factory trained representative shall provide on-site training for the contractor’s field personnel in the use of grooving tools and installation of product. The representative shall periodically visit the job site to ensure best practices in grooved product installation are being followed. (A distributor’s representative is not considered qualified to conduct the training.)

L. All piping shall be adequately supported from the buildings structural framing system with adjustable hangers to maintain grading where required and to prevent sagging and pocketing.

M. Provide supports between piping and building structure where necessary to prevent swaying.

N. The use of wire or perforated metal to support pipe will not be permitted.

O. Do not install back-to-back change of direction or offset fittings such as ells and tees without a minimum of 3" nipple for the purposes of insulating the pipe properly.

3.3 CLEARANCE TO ELECTRICAL PANELS

A. In no case shall an exposed metallic pipe conveying any water or gas be located closer than 36” from the front or sides of a Motor Control Center (MCC), electrical breaker/fuse panel or transformer per NEC codes. When a pipe appears to be shown on the plans near an electrical breaker panel or transformer, adjust the routing and position of that pipe or piping accordingly.

B. If the contractor deems that an extra is required to make the necessary offsets in a pipe for whatever reason, contact the engineer before installing the piping within 36”. Any cost to relocate a pipe once installed to close to an electrical panel will be the responsibility of the contractor.

C. For MCC panels more than 800 amps, additional clearance requirements of 72” should be adhered to.

3.4 MECHANICAL WIRING

A. Provide all temperature control wiring, all interlock wiring, and equipment control wiring for the equipment that is to be provided under this Division unless specifically shown on electrical drawings.

B. All wiring shall be not less than No. 14 insulated color-coded wire in thin wall conduit.

C. The following schedule is intended to summarize the division of work and material responsibilities between the mechanical contractor and the electrical contractor.

ITEM	FURNISHED BY	SET BY	POWER WIRING	CONTROL WIRING
Fused and unfused disconnect switches	EC/MC	EC	EC	
Control relays and transformers	MC	MC	EC	MC
Thermostats, time switches*	MC	MC	EC	MC
Temperature control panels	MC	MC	EC	MC
Refrigeration equipment and controls	MC	MC	EC	MC

MC = Mechanical Contractor
EC = Electrical Contractor

* Motor driven units which are controlled from line voltage automatic controls such as line voltage thermostats, float switches or time switches which conduct full load current of the motor shall be wired for both power and control circuit under the electrical contract. However, if the control device does not conduct full load current, then the responsibility shall be set forth in the above schedule. (Example: a 208-volt, 3-phase, 3-wire motor requires 120-volt control. Electrical contractor shall

furnish a 120-volt circuit for control and 208-volt circuit for power and wire the power circuit. Mechanical contractor shall wire the control circuit).

(a) Wiring from alarm contacts to alarm system by EC; all control function wiring by MC. MC to coordinate location with EC.

3.5 OPERATION INSTRUCTIONS

A. Upon completion of all work and all tests, Contractor shall furnish the necessary skilled labor for operating all systems and equipment installed under this Division. The purpose is to demonstrate the workability of all systems and to instruct the Owner or their representative fully in the operations, adjustment, and maintenance of all equipment furnished utilizing the appropriate sections of the maintenance manual as a reference guide. Give at least 48 hours notice to the Owner and Architect/Engineer in advance of this period.

3.6 ACCEPTANCE TEST

A. After the final air and water balance test, all environmental systems shall be tested to prove satisfactory performance of all units.

B. The entire air conditioning system shall be tested during first cooling season following the completion of the mechanical systems; and it shall be established that all controls are calibrated accurately and performing properly and that all units are cooling satisfactorily.

C. The entire ventilation system shall be tested at the completion of the project; and it shall be established that controls are performing properly and that all rooms are being ventilated satisfactorily.

D. Check all duct smoke detectors and freezestats to assure that they are functioning properly.

3.7 MAINTENANCE

A. The Contractor shall provide the necessary skills and labor to assure the proper operation of and to provide all required maintenance for all equipment and controls provided under Division 23 for a period of one year after substantial completion of the contract as defined in paragraphs B through D below.

B. The Contractor shall receive calls for all problems experienced in the operation of the equipment provided under Division 23 and shall take steps to immediately correct any deficiencies that may exist.

C. All equipment that requires repairing shall be immediately serviced and repaired. Since the period of maintenance runs for one year concurrently with the warranty and guarantee, all parts and labor shall be furnished at no extra cost to Owner (including all controls).

D. When emergency service is required beyond working hours to maintain the system in operation, the Contractor shall furnish such service.

3.8 SCAFFOLDING, RIGGING, HOISTING

A. Provide all scaffolding, rigging, hoisting, and services necessary for delivery, erection, and placement within the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.

3.9 THERMAL CONTINUITY

A. Where openings are created for duct work, piping, outdoor intake ducts, or any type of mechanical equipment penetration thru an insulated wall, roof, or partition, Mechanical Contractor shall be responsible for providing an air tight seal against air infiltration.

B. Where openings are larger than 1/4”, Mechanical Contractor shall fill opening with an insulation matching the existing R-value of the thermal barrier, but no less than R-18 for walls and R-30 for roofs, and then seal air tight.

3.10 WATERPROOFING

A. Where any work pierces waterproofing, the method of installation shall be as approved by the Architect/Engineer before work is done. Contractor shall furnish all necessary sleeves, caulking, and flashing required to make openings watertight.

3.11 ESCUTCHEON PLATES

B. Escutcheon plates shall be provided for all exposed uninsulated pipes passing through walls, floors, ceilings, into cabinets, or other areas where visibly seen by occupants of the facility. Plates shall be nickel plated metal of the split ring type and of size to match the pipe or conduit. Where plates are provided for pipes passing through sleeves which extend above the floor surface, provide deep recessed plates to conceal the pipe sleeves.

C. Plates for water supply penetrations serving sinks or water closets shall be on-piece non-split ring.

3.12 REMOVAL AND RELOCATION OF EXISTING PIPING AND/OR EQUIPMENT

A. The layout of the existing mechanical system as shown on the drawings has been prepared from existing building drawings and from inspection of the site. All data shown is the most accurate that is available at this time. Contractor shall visit the site to determine the exact quantities and the extent of equipment and piping to be removed and/or relocated prior to bid.

B. All materials to be removed shall become the property of the Contractor and shall be removed from the site unless specifically otherwise indicated on the drawings and/or tagged by Owner.

C. The Owner has the right of first refusal of all removed equipment and materials.

3.13 ACCESS DOORS

A. Mechanical Contractor shall provide and locate all required access doors where they may be required to service equipment, valves, dampers, etc. in inaccessible ceilings and walls. General Trades Contractor shall install.

3.14 INSTALLATION

A. Unless otherwise specifically indicated on the plans or specifications, all equipment and materials shall be installed in accordance with the recommendations of the manufacturer. Maintain maximum headroom and space conditions at all points.

3.15 ACCESSIBILITY

A. Locate all equipment which must be serviced, operated, or maintained in fully accessible positions. Equipment shall include, but not be limited to, dampers, valves, traps, clean-outs, motors, controllers, switchgear, and drain points. If required for better accessibility, locate access doors for this purpose. Minor deviations from drawings may be made to allow for better accessibility.

3.16 CLEAN-UP

A. At the completion of work, all equipment on the project shall be checked and thoroughly cleaned including coils, plenum, under equipment and all other areas around or in equipment provided under this Section. Clean all exposed surfaces of all piping, hangers, ducts, and other exposed metal of all grease, plaster, or other foreign material. Remove all stick-on labels and clean surfaces.

B. At the completion of each work day, remove from the building, the premises, and surrounding streets, alleys, etc., all rubbish and debris resulting from the operations and leave all equipment spaces clean and ready for use.

3.17 DAMAGED SURFACES

A. At the completion of work, all mechanical equipment furnished under this contract shall be checked for paint damage, and any factory-finished paint that has been damaged shall be repaired to match the adjacent areas. Any metal cabinet, jacket, or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

3.18 SLEEVES AND INSERTS

A. The contractor shall provide and locate all sleeves and inserts required before the floors and walls are built, or shall be responsible for the cost of cutting and patching required to facilitate installation after walls or floors are constructed.

B. Each contractor shall be responsible for any drilling required for installation of hangers.

C. Where pipe motion due to expansion or contraction will occur, make interior wall sleeves of sufficient diameter to permit free movement of pipe and insulation.

D. All sleeves shall be constructed of steel pipe unless otherwise noted on the drawings or specifically specified for a particular installation.

3.19 OLD PIPE LINES

A. Old sewer, water, steam, or other pipes encountered which interfere with the proper installation of new work and which will not be used in connection with the new work, shall have openings closed in a proper manner concealed in wall; or, if necessary, relocate or remove the pipes as directed by the Architect/Engineer.

3.20 COORDINATION AND COOPERATION WITH OTHER TRADES

A. The Contractor for this work shall examine the drawings and specifications for other parts of the work, and if head room or space conditions appear inadequate, or if any discrepancies occur between the plans and their work and the plans for the work of others, they shall report such discrepancies to the Architect/Engineer and shall obtain written instructions for any changes necessary to accommodate their work with the work of others. Any changes in the work covered by this specification made necessary by the failure or neglect of the Contractor to report such discrepancies shall be made by and at the expense of this Contractor.

B. Where the mechanical work will be installed near, or will interfere with work of other trades, the Contractor shall assist in working out space conditions to make a satisfactory adjustment. If directed by the Engineer, the Contractor shall prepare composite working drawings and sections at a suitable scale not less than 1/4" = 1'-0", clearly showing their work is to be installed in relation to the work of other trades. If the Contractor installs their work before coordinating with other trades, or so as to cause any interference with work of other trades, they shall make the necessary changes in their work to correct the condition without extra charge.

3.21 RECORD OF CHANGES

A. Show on blue line prints in red ink all changes from original plans made during installation of work and file with Architect/Engineer when work is complete.

B. Coordinate with Division 1 for "As-Built" drawings and specification requirements.

3.22 SURVEY AND MEASUREMENTS

A. Base all measurements, both horizontal and vertical, on established benchmarks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work.

B. If any discrepancy between actual measurements and those indicated is discovered, which prevents following good practice or the intent of the drawings and specifications, the Architect shall be notified through the general Contractor, and work shall not proceed until instructions are received from the Architect.

3.23 PROTECTION

A. The Contractor shall protect all work and material from damage by his work or workmen, and shall be liable for all damage thus caused.

B. The Contractor shall be responsible for work and equipment until finally inspected, tested, and accepted; protecting work against theft, injury, or damage; and shall carefully store material and equipment received on site which is not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

3.24 RESPONSIBILITY OF CONTRACTOR

A. The Contractor is responsible for the complete and satisfactory installation of the work in accordance with the intent of the drawings and specifications. They shall provide, without extra charge, all incidental items required, as part of his work, even though not particularly specified or indicated. The installation shall be so made that its several component parts will function together as a workable system and shall be left with all parts adjusted and in working order.

3.25 EQUIPMENT ON ROOFS OR ELEVATED SURFACES

A. Do not locate mechanical appliances, equipment, or fans that require service within 10-feet of a roof edge or open side of a walking surface located more than 30" above the floor, roof, or grade below. Where equipment is placed closer than described herein, guards shall be furnished with top of the guard located not less than 42" above the elevated surface adjacent to the guard. The guard shall be constructed to prevent the passage of a 21-inch diameter sphere and shall comply with the loading requirements for guards specified in the Building Code.

3.26 PENETRATION OF FIRE AND SMOKE BARRIERS

A. Penetrations of floor, wall and/or ceiling assemblies required to have a fire or smoke resistance rating shall be protected in accordance with all applicable codes and as further described in Division 23 specification sections.

3.27 OPERATION AND MAINTENANCE MANUALS

A. The Contractor shall prepare operation and maintenance manuals which shall cover all systems installed under Division 23.

B. The manuals shall be submitted to the Engineer in draft form for approval prior to preparation of three copies for final submission to the Architect for delivery to the Owner.

C. The manuals shall be 8-1/2" x 11" size and assembled in loose-leaf three ring or post binders. The manual shall be adequately indexed and contain the following information.

1. Contractors' names, addresses, and telephone numbers.
2. Alphabetical list of all system components with the names and addresses, and 24-hour phone number of the companies responsible for servicing each item during the warranty period.
3. Guarantees and warranties of all equipment whenever applicable.
4. All manufacturer's data that are applicable to the installed equipment such as the following:

    a. Shop drawings.
    b. Installation instructions.
    c. Lubrication instructions.
    d. Wiring diagrams.

5. All equipment shall be clearly identified as to the model, size, flow data, electrical characteristics, and other design and sizing parameters as may be applicable to the actual installed piece of equipment or systems described.
6. A simplified description of the operation of all systems including the function of each system, and piece of equipment within a system. These descriptions shall be supported with a schematic flow diagram when applicable.
7. Temperature control diagrams including an explanation of the control sequence of each system along with the following instruction whenever applicable.

    a. Emergency procedures for failure of major equipment.
    b. Normal starting, operating and shutdown.
    c. Summer or winter shutdown.

8. System Balancing report.
9. Valve tag list when applicable.
10. An outline of a preventative maintenance program for each system or item of equipment, and shall include a schedule of inspection and maintenance. It shall suggest the maintenance and inspection that should be performed by the owner and that which should be completed with outside service.

3.28 DUST PROTECTION

A. During demolition, work will be performed in areas where dust can be a nuisance to occupants or cause operating difficulties to equipment. The contractor shall take appropriate measures to minimize production of dust and provide dust barriers to separate the work area in an approved method to minimize dirt and dust migration with the use of tarpaulins, plastic enclosures, temporary walls, or other means as necessary, to be approved by the Owner.

B. The Contractor may, with approval of Owner, wet down concrete and masonry surfaces being demolished, but the contractor shall also provide means to control water migration to adjoining spaces, provide means to remove water which may accumulate due to this wetting process, and be responsible for any structural or occupants' material damage caused from the use of water.

3.29 PATCHING AND REPAIR OF EXISTING OPENINGS

A. The plumbing contractor shall include within their bid unless specifically noted in the plans or specifications for another trade to complete the work, the material and labor for all infilling, patching and repair of existing openings through walls, floors or roofs that remain when plumbing systems such as pipe or other equipment are removed.

B. Unless specifically noted on the plans, the repair shall be of same material and color as the original surface being repaired. In the event the material being patched is not available or cannot be matched, consult the architect for a suitable material that can be used.

C. Employee or sub-contractor the work of infilling, patching, and repairing to a professional trade person skilled in the use of materials being used for the repair.

D. Include all painting or finishing of the surface to match existing color and texture.

E. Include the installation and repair of all trim, base molding, flooring, and other surface treatments when the mechanical work requires to provide a finished look to match all surrounding materials and surfaces.

3.30 PAINTING EXTERIOR FERROUS PIPING

A. All exterior ferrous piping shall be primed and painted.

B. Contractor shall grind the pipe smooth.

C. Clean piping and make ready for paint.

D. Prime all exterior piping with metal primer.

E. Paint with two coats of industrial enamel.

END OF SECTION

WOLGAST CORPORATION

PRE–BID MEETING

Bangor Township Schools

2023 Bond - Phase 3A - Middle School Addition & Renovations

PRE-BID MEETING AGENDA

Tuesday, January 21, 2025, at 3:30 PM

1. **Introductions:**
   a. **Owner Rep:** Matt Schmidt- Bangor Township Schools– Superintendent
   b. **Construction Manager:** Dale Schwerin, Wolgast Corporation – Project Manager
      Dan Blossom, Wolgast Corporation – Field Manager
   c. Architect: Julia Krieger- Integrated Designs, Inc.– Architect

2. **Project Scope:**

03 01 00 – Concrete
04 00 00 – Masonry
05 00 00 - Metals
06 00 00 – General Trades
07 50 00 – Roofing
08 40 00 – Glass & Glazing
09 10 00 – EIFS
09 65 00 – Flooring
09 90 00 – Painting
22 23 00 – Plumbing & HVAC Systems
26 00 00 - Electrical, Communication and Fire Alarm
31 00 00 – Site Work

3. **Contractor Bid Proposals:**
   a. Sealed bids for this project are due no later than: **Friday, February 7, 2025@ 2:00 PM**
      Proposals may be mailed or delivered in person to:
      Matt Schmidt, Superintendent
      Bangor Township Schools
      3359 E Midland Road
      Bay City, MI 48706

      All bids will be opened and read aloud at approximately 2:01 PM at the Administration Office.

      Electronic Sealed bids may also be submitted using Building Connected see below link.
      https://app.buildingconnected.com/login?retUrl=%2F

      If you want to listen in during the bidding process here is the link https://8x8.vc/wolgast/lisa.donahue

   b. The successful bidder will be “prime” contractor having a contract directly with the Bangor Township Schools.
   c. Familial Relationship Affidavit – Section 00306 of Spec Book.
   d. Iran Economic Sanctions Act – Section 00307 of Spec Book

4. **Addenda:**
    a. The Architect will issue any and all addenda.
    b. Last day to submit addendum questions will be Friday, January 31, 2025.

5. **Milestone Schedule:**
    a. Award of Contracts: It is the intention of Bangor Township Schools to award contracts on or about February 24, 2025.
    b. The start & completion dates for this project are tentatively set for:
        Start Date: **See Milestone Schedule**
        Completion Date: **See Milestone Schedule**
    a. The Construction Manager will provide a detailed project construction schedule to all contractors based on input received at the post bid interview.

6. **Bonds:**
    a. A five percent (5%) bid security must accompany each bid. Personal or Company checks do not satisfy the bid bond requirement and may be grounds for disqualification of that bid.
    b. All bidders must have the ability to provide Performance Bonds and Labor and Material Payment Bonds. These bonds **may or may not** be requested by the Owner if the awarded proposal amount is less than $50,000.00, but all bids **must include** the cost of the PLM bond regardless of bid amount. All awarded proposal amounts exceeding $50,000.00 must be secured by both performance and payment bonds as required by State law.
    c. The Performance Bond and Labor and Material Payment Bond are to be submitted to the Construction Manager before construction begins.

7. **Inquiries:**
    a. All questions regarding the design, the drawings and the specifications are to be faxed or emailed to: Wolgast Corporation, Attn: Dale Schwerin, Project Manager, Fax #: 989-790-9063 or email: dschwerin@wolgast.com also copy Lisa Donahue at ldonahue@wolgast.com in the form of a Clarification Request Form. This will be forwarded to the architect for clarification. The Construction Manager **will make no** interpretations of the construction documents.
    b. All questions regarding the bidding procedures (what to bid, how to fill out the proposal form, construction schedules, etc) are to be directed to Wolgast Corporation, Attn: Dale Schwerin, Project Manager, Office #: 989-790-9120, or email: dschwerin@wolgast.com and copy Lisa Donahue at ldonahue@wolgast.com .

8. **Post Bid Procedures:**
    a. Post-Bid interviews will be conducted with the low bidder and in some cases the second low bidder. The interviews will be conducted by the Construction Manager and the Architect. The Owner may elect to be present at the interviews.
    b. The apparent low bidders will be notified the day after the bid of their scheduled interview time.
    c. Bid results will be made available from the Construction Manager.

9. **Questions:**

END OF PRE-BID MEETING AGENDA

Bangor Township Schools

2023 Bond - Phase 3A - Middle School Addition & Renovations

Pre - Bid Sign In

Tuesday, January 21, 2025

3:30:00 PM, Middle School Main Entrance

Wolgast Corporation /Integrated Designs, Inc.

Company (Printed)	**Name** (Printed)	**Phone/Cell**		**Email**
JE Johnson Mechanical	Eric Brown	989-721-2037		eric@jejohnson.com
Denali Construction	PJ Luebbert	(989)573-1617		denalipj@gmail.com
Pumford Construction	Caleb Krueger	989-928-2674		calebk@pumford.com
KawKawlin Roofing	Rich Allard	989-450-1113		rich@kawkawlinroofing.com
Champagne & Marx	Chris Schumann	989-239-5679		chris@champagnemarx.com
Wm. F. Nelson Elect	Tony Bell	989.274.5766		tony@wfnelson.com
Bierlein Trombley Elect.	Adam Bierlein	989-529-0841		adam@btelectric.com
Sto Corp	Jer Walker	248-949-3620		jwalker@stocorp.com

Bangor Township Schools

2023 Bond - Phase 3A - Middle School Addition & Renovations

Pre - Bid Sign In

Tuesday, January 21, 2025

3:30:00 PM, Middle School Main Entrance

Wolgast Corporation /Integrated Designs, Inc.

Company (Printed)	Name (Printed)	Phone/Cell		Email
Denali	Chris Rau	989-430-9202		DenaliChrisR@Gmail.com
~~Tom Tacey~~ John E Green	Tom Tacey	989.450.7812		tomtacey@johnegreen.com
Metal Arts	Matt Brownlee	989-621-7869		mbrownlee@metalarts Construction.com
Sugar Construction	Tom Neuenfeldt	9898592432		tomn@sugarconstruction.com
R.C. Hendrick	Stephen Rau	989-666-3046		Stephen@RCHendrick.com
Bay Valley Electric	Aurelia Kissel	9892956451		services@bayvalleyelectric.org

CODE SUMMARY

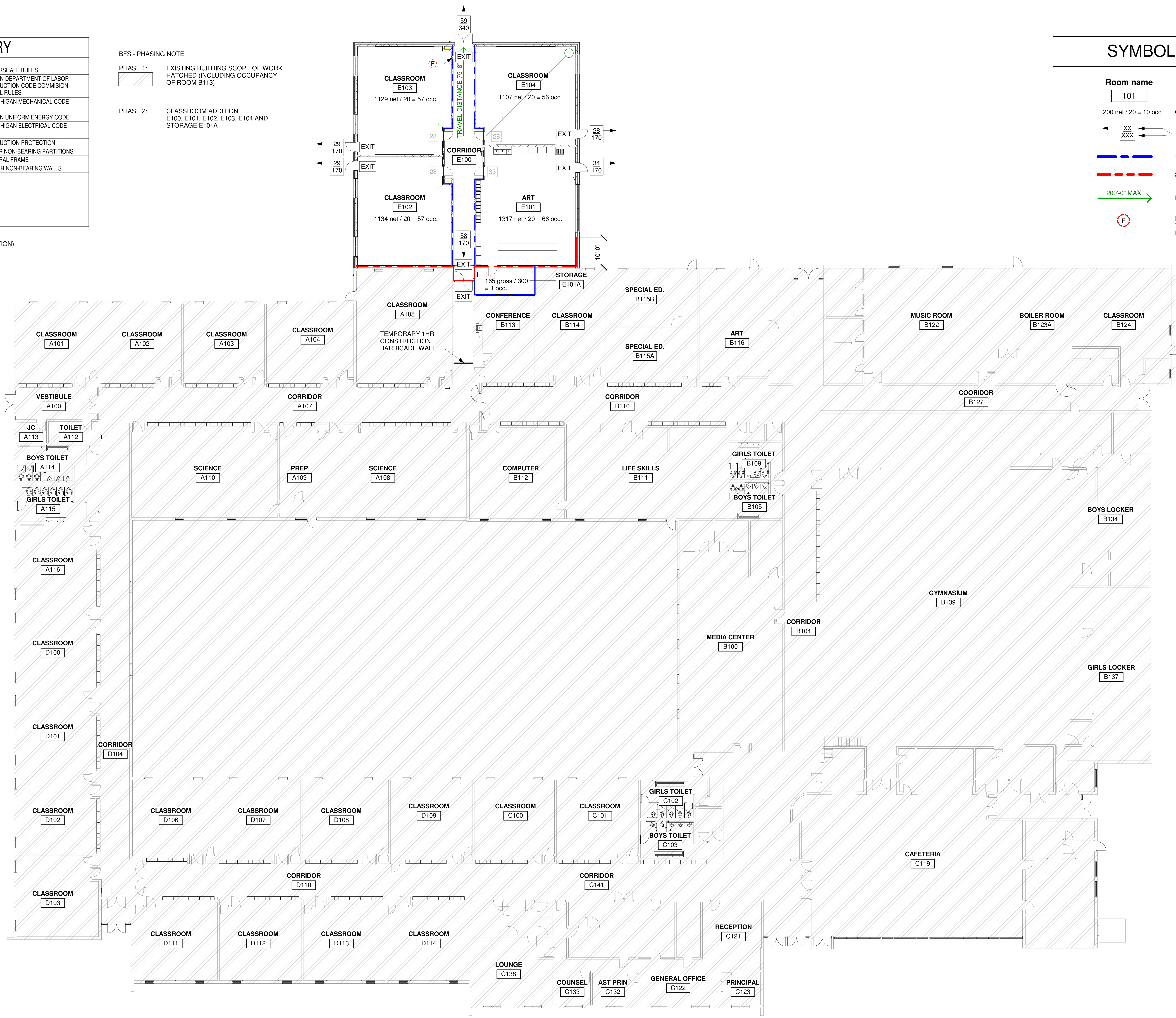
CODES			
	2015 MICHIGAN BUILDING CODE		FIRE MARSHALL RULES
	STATE OF MICHIGAN BARRIER FREE ACCESS DESIGN RULES (2009 ICC/ANSI A117.1)		MICHIGAN DEPARTMENT OF LABOR CONSTRUCTION CODE COMMISION GENERAL RULES
	NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)		2021 MICHIGAN MECHANICAL CODE
	2021 MICHIGAN PLUMBING CODE		MICHIGAN UNIFORM ENERGY CODE
	NATIONAL ELECTRICAL SAFETY CODE		2023 MICHIGAN ELECTRICAL CODE
CODES FIRE RESISTIVE ANALYSIS			
	CLASSIFICATIONS:		CONSTRUCTION PROTECTION:
1	STORIES	0	INTERIOR NON-BEARING PARTITIONS
E	OCCUPANCY TYPE	0	STRUCTRAL FRAME
IIB	CONSTRUCTION TYPE	0	EXTERIOR NON-BEARING WALLS
NO	SPRINKLER SYSTEM	0	ROOF
YES	FIRE PROTECTION: PORTABLE FIRE EXTINGUISHERES PER SECTION 906.		
YES	FIRE PROTECTION: FIRE ALARM AND DETECTION SYSTEM PER SECTION 907 (EXISTING FIRE PROTECTION SYSTEM WILL BE EXTENDED INTO AREA OF ADDITON)		

TOTAL ADDED SF: 5,826 (SEPARATION VIA 2HR PARTITION)

BFS - PHASING NOTE

PHASE 1: EXISTING BUILDING SCOPE OF WORK HATCHED (INCLUDING OCCUPANCY OF ROOM B113)

PHASE 2: CLASSROOM ADDITION E100, E101, E102, E103, E104 AND STORAGE E101A



N

LIFE SAFETY PLAN

1/16" = 1'-0"

SYMBOL LEGEND

Room name
101
200 net / 20 = 10 occ — OCCUPANT LOAD CALCULATION

XX / XXX — EGRESS OCCUPANT LOAD / EGRESS OCCUPANT CAPACITY

1HR RATED PARTITION

2HR RATED PARTITION

200'-0" MAX — PATH OF TRAVEL

F — RECESSED FIRE EXTINGUISHER CABINET, TRAVEL DISTANCE NOT TO EXCEED 75FT. REFER TO MOUNTING DETAIL 1/A9.0.

MARQUETTE OFFICE:
1021 W. BARAGA AVENUE
MARQUETTE, MI 49855
PHONE: (906)228-4480 FAX: (906)228-7524
BRIGHTON OFFICE:
8571 W. GRAND RIVER AVE., SUITE 600
BRIGHTON, MI 48816
PHONE: (810)229-2701 FAX: (810)229-6767
ARCHITECTURE
ENGINEERING
CONSULTING
INTEGRATED DESIGNS, INC.

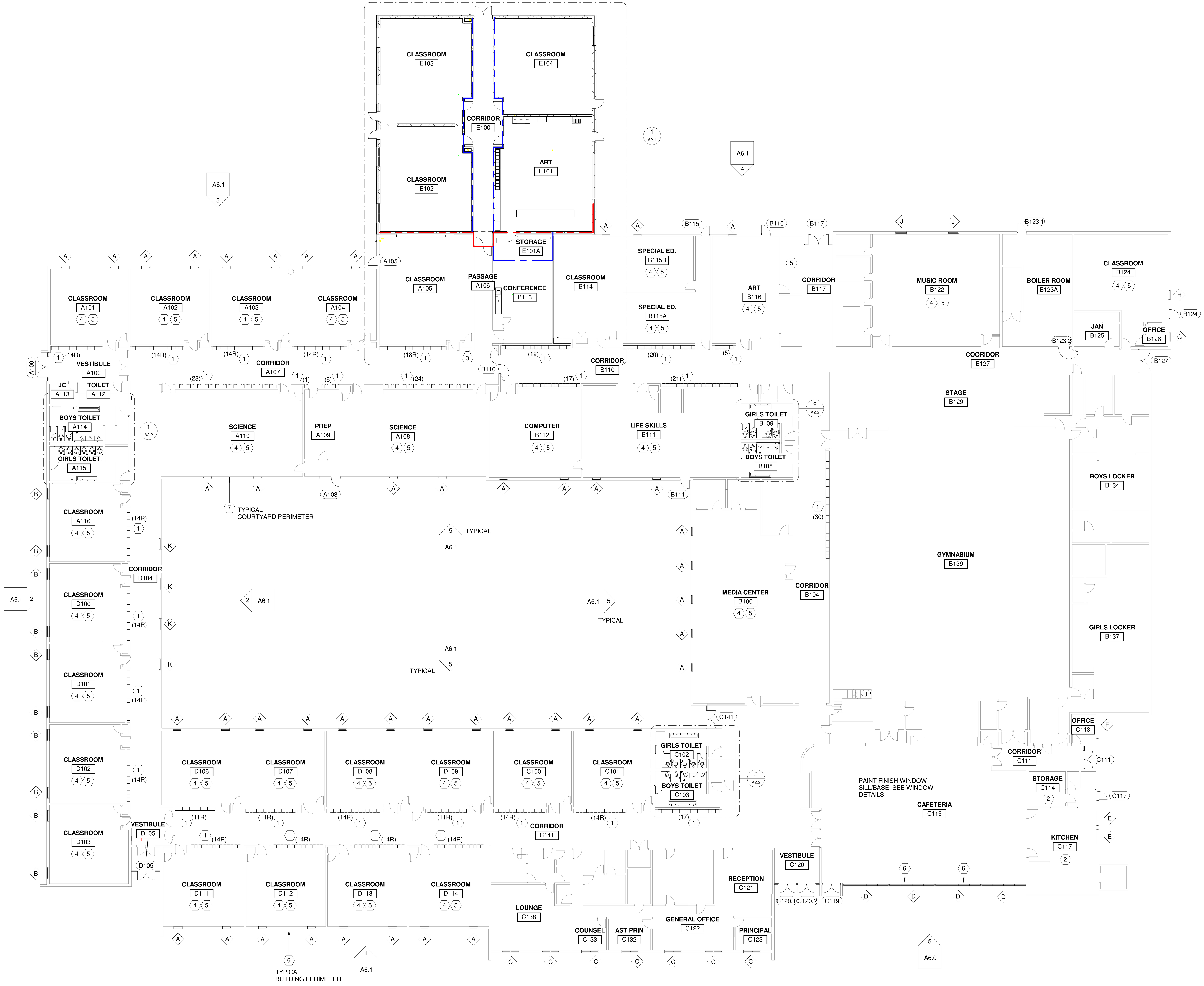
BANGOR TOWNSHIP SCHOOL DISTRICT
PHASE 3A - MIDDLE SCHOOL ADDITION & RENOVATIONS
3281 KIESEL RD, BAY CITY, MI 48706
PROJECT NO. 22-011

NO.	REVISIONS	DATE
0	FOR CONSTRUCTION	12/20/24

	BY
DESIGN	-
DRAWN	-
CHECKED	-
APPROVED	-

COMPOSITE & LIFE SAFETY PLAN

A0.1



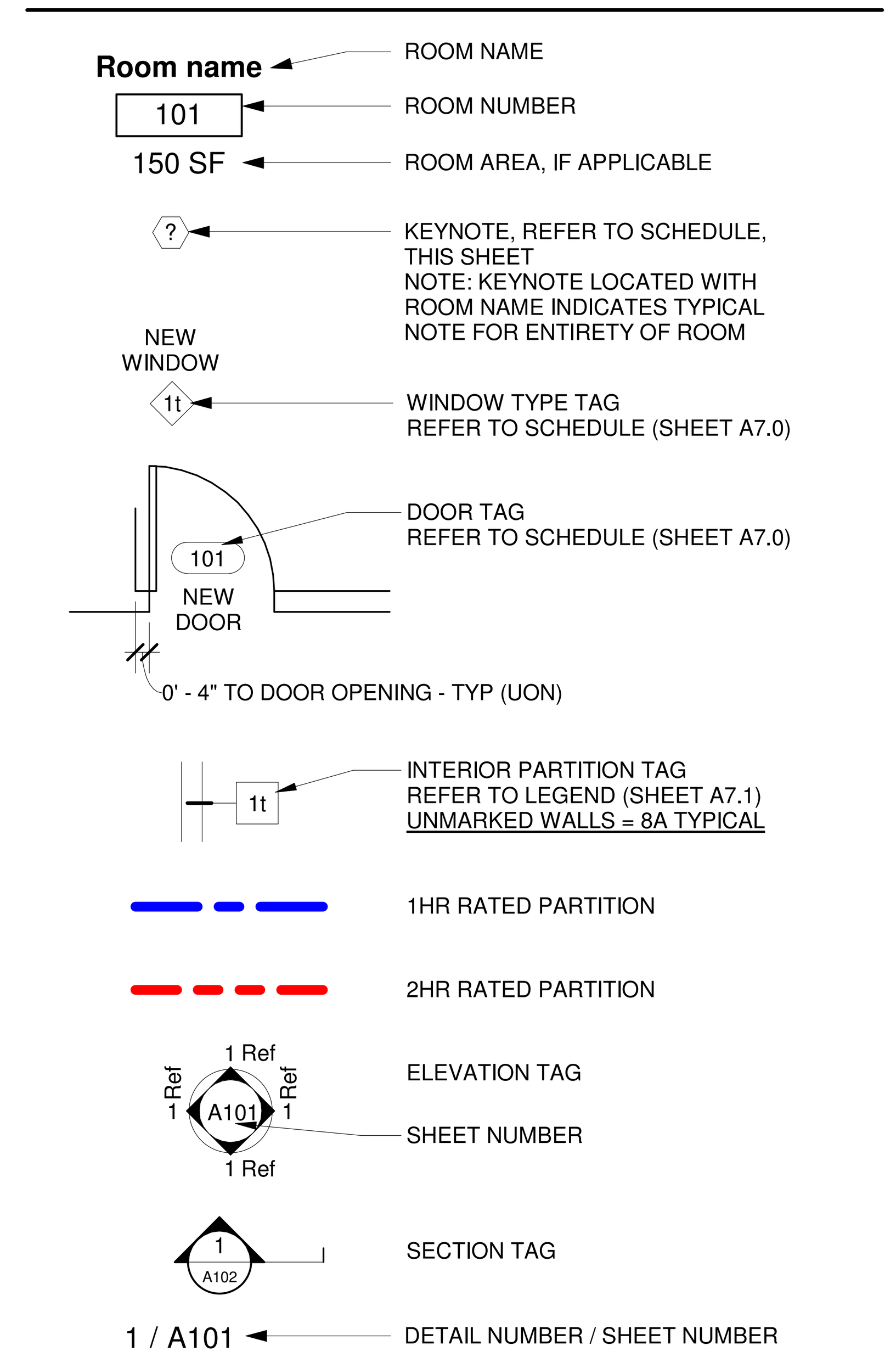
NEW WORK FLOOR PLAN

1/16" = 1'-0"

KEYNOTES

1. INSTALL NEW 15"x15"x6'-0" SINGLE TIER METAL LOCKERS ON EXISTING BASE. (NUMBER) REFERS TO NUMBER OF LOCKERS. CONFIRM ALL COUNTS AND SIZES IN FIELD.
2. COORDINATE WITH LIGHTING MODIFICATIONS WORK TO PATCH/REPAIR AND PAINT FINISH EXISTING GWB CEILING AS REQUIRED.
3. BOTTLE FILLER, REFER TO PLUMBING AND ELECTRICAL. INSTALL STAINLESS STEEL PANEL, BRUSHED FINISH, OVER DISTURBED WALL AREA.
4. INSTALL NEW WHITEBOARDS / TACKBOARDS. 1:1 REPLACEMENT. ANY EXISTING CHALKBOARDS TO BE REPLACED WITH WHITEBOARDS. CONTRACTOR RESPONSIBLE TO FIELD VERIFY SCOPE OF EACH ROOM.
5. PATCH/REPAIR AND PAINT FINISH ALL WALL SURFACES, SOFFITS, DOOR FRAMES (BOTH SIDES) AND WINDOW SILLS. COLOR AS SCHEDULED.
6. PAINT FINISH WINDOW SILL / BASE, REFER TO WINDOW DETAILS.
6. PREPARE SURFACE AND INSTALL STOCREATIVE BRICK PRODUCT AS SPECIFIED. TYPICAL FOR ALL EXISTING EIFS AT BUILDING PERIMETER.
7. CLEAN, PREP, REPAIR AS NECESSARY, AND PAINT EXISTING EXTERIOR EIFS FACADE. REFER TO ELEVATIONS.

SYMBOL LEGEND



GENERAL NOTES

1. EXISTING CONDITIONS SHOWN ON THESE DRAWINGS HAVE BEEN OBTAINED FROM EXISTING DRAWINGS AND FIELD INSPECTIONS. CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY THE EXISTING CONDITIONS REGARDING DEMOLITION AND NEW WORK BEFORE SUBMITTING A BID FOR THIS PROJECT. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO OWNER OR OWNERS REPRESENTATIVE.
2. HALF-TONE LINES INDICATE EXISTING CONDITIONS. DASHED LINES INDICATE DEMOLITION WORK. BOLD LINES INDICATE NEW WORK. REFER TO KEYNOTES FOR DESCRIPTION.
3. ANY EXISTING CONDITIONS TO REMAIN THAT ARE DISTURBED ARE TO BE PATCHED/REPAIRED TO MATCH ADJACENT CONDITIONS.
4. WORK SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES, LAWS, AND REGULATIONS.
5. REFER ALSO TO ELECTRICAL, MECHANICAL, STRUCTURAL, AND CIVIL DRAWINGS AS APPLICABLE FOR ADDITIONAL SCOPE OF WORK.
6. REFER TO WALL TYPES FOR WALL CONSTRUCTION, MATERIALS, HEIGHTS, ETC.
7. INTERIOR/EXTERIOR DIMENSIONS ARE FROM FACE OF GYPSUM BOARD/C.M.U.
8. ROOM NUMBERING SYSTEM USED IN THIS CONSTRUCTION DOCUMENT IS FOR ARCHITECTURAL PURPOSES. VERIFY ACTUAL ROOM NUMBERING/ LAYOUT AS REQUIRED.
9. PROVIDING AND INSTALLING THE REPLACEMENT OF ANY NEW FINISHES, DOOR ASSEMBLIES, ETC., SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING AND PREPARATION FOR NEW WORK IN ANY LOCATION WHERE APPLICABLE. REFERENCE NEW WORK PLANS FOR FULL SCOPE OF WORK.
10. ALL NEW WORK SHALL MEET BARRIER FREE REQUIREMENTS (I.E. GRAB BARS, DOOR HARDWARE, CASEWORK HEIGHTS, ETC.)

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ARCHITECTURE ENGINEERING CONSULTING
INTEGRATED DESIGNS, INC.

BANGOR TOWNSHIP SCHOOL DISTRICT
PHASE 3A - MIDDLE SCHOOL ADDITION & RENOVATIONS
3281 KIESEL RD, BAY CITY, MI 48706
PROJECT NO. 22-011

NO.	REVISIONS	DATE
0	FOR CONSTRUCTION	12/20/24

	BY
DESIGN	-
DRAWN	-
CHECKED	-
APPROVED	-

NEW WORK FLOOR PLAN

DOOR SCHEDULE

DOOR NUMBER	FRAME MATERIAL	FRAME TYPE	DOOR MATERIAL	DOOR TYPE	DOOR FIRE RATING	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	HARDWARE SET	DETAIL REFERENCE HEAD	DETAIL REFERENCE JAMB	DETAIL REFERENCE THRESHOLD	DETAIL REFERENCE SIGN TYPE	REMARKS
A100	AL	K	FRP	2		7' - 0"	7' - 0"	01					2
A105	AL	B	FRP	2		3' - 0"	6' - 8"	03	1/A7.3	1/A7.3		B	2
A108	AL	L	FRP	2		3' - 0"	6' - 8"	09					2
B110	HM	A	HM	1	90 MIN	6' - 0"	7' - 0"	12					1,2
B111	AL	B	FRP	2		3' - 0"	6' - 8"	09					2
B115	AL	B	FRP	2		3' - 0"	6' - 8"	03					2
B116	AL	B	FRP	2		3' - 0"	6' - 8"	03					2
B117	AL	J	FRP	2		7' - 0"	7' - 0"	01					2
B123.1	AL	B	FRP	1		3' - 0"	6' - 8"	08					2
B123.2	HM	B	HM	1	90 MIN	3' - 8"	6' - 8"	13					1,2
B124	AL	B	FRP	2		3' - 0"	6' - 8"	03					2
B127	AL	G	FRP	2		7' - 8"	8' - 0"	02					2
C111	AL	F	FRP	2		6' - 0"	7' - 0"	02					2
C117	AL	B	FRP	1		3' - 0"	6' - 8"	07					2
C119	AL	E	FRP	3		6' - 0"	7' - 0"	02					2
C120.1	AL	D1	FRP	3		6' - 0"	7' - 0"	06					2
C120.2	AL	D2	FRP	3		6' - 0"	7' - 0"	04					2
C141	AL	M	FRP	2		6' - 0"	7' - 0"	05					2
D105	AL	H	FRP	2		6' - 0"	7' - 0"	01					2
E100.1	HM	B	HM	1	90 MIN	6' - 0"	7' - 0"	12	4/A7.3			B	1
E100.2	AL	N	FRP	2		6' - 0"	7' - 2"	01	2/A7.3 SIM	2/A7.3 SIM	2/A7.3 SIM	C	
E101.1	HM	C	WD	2	20 MIN	3' - 0"	7' - 0"	10	14/A7.2 SIM	3/A7.3		A	
E101.2	AL	B	FRP	1		3' - 0"	7' - 2"	03	2/A7.3	2/A7.3	2/A7.3	B	
E101.3	HM	A	WD	1	90 MIN	3' - 0"	7' - 0"	11	5/A7.3	5/A7.3		A (ON DOOR)	
E102.1	HM	C	WD	2	20 MIN	3' - 0"	7' - 0"	10	14/A7.2 SIM	3/A7.3		A	
E102.2	AL	B	FRP	1		3' - 0"	7' - 2"	03	2/A7.3	2/A7.3	2/A7.3	B	
E103.1	HM	C	WD	2	20 MIN	3' - 0"	7' - 0"	10	14/A7.2 SIM	3/A7.3		A	
E103.2	AL	B	FRP	1		3' - 0"	7' - 2"	03	2/A7.3	2/A7.3	2/A7.3	B	
E104.1	HM	C	WD	2	20 MIN	3' - 0"	7' - 0"	10	14/A7.2 SIM	3/A7.3		A	
E104.2	AL	B	FRP	1		3' - 0"	7' - 2"	03	2/A7.3	2/A7.3	2/A7.3	B	

REMARKS TO DOOR SCHEDULE

1. PAINT FINISH NEW HOLLOW METAL DOOR FRAME / DOOR (BOTH SIDES) PT3.
2. **FIELD VERIFY ALL EXISTING DOOR/FRAME OPENINGS BEING REPLACED.**

GENERAL NOTES TO DOOR SCHEDULE

1. DOOR NUMBER: SEE FLOOR PLAN(S) FOR LOCATION OF DOORS.
2. FRAME: SEE CODE TO "DOOR/WINDOW SCHEDULE" FOR DEFINITION OF DESIGNATIONS IN MATERIAL COLUMN. SEE "DOOR FRAMES" FOR DESCRIPTION OF DESIGNATIONS IN FRAME TYPE COLUMN.
3. DOOR: SEE CODE TO "DOOR/WINDOW SCHEDULE" FOR DEFINITION OF DESIGNATIONS IN MATERIAL COLUMN. SEE "DOOR TYPES" FOR DESCRIPTION OF DESIGNATIONS IN DOOR TYPE COLUMN.
4. FIRE RATING: LABELING INDICATED IS PER NFPA 80. LABELS SHALL BE APPROVED AND PERMANENTLY AFFIXED.
5. SIZE: SIZE IS GIVEN AS WIDTH x HEIGHT.
6. HARDWARE SET: SEE HARDWARE SPECIFICATIONS FOR DESCRIPTIONS.
7. ALL INTERIOR AND EXTERIOR WINDOWS WITHIN 24" TO THE VERTICAL EDGE OF AN INTERIOR OR EXTERIOR DOOR MUST CONTAIN TEMPERED SAFETY GLASS.

CODE TO DOOR & WINDOW SCHEDULE

AL — ALUMINUM
HM — HOLLOW METAL (PAINT FINISH)
WD — WOOD VENEER FINISH
FRP — FIBER REINFORCED PLASTIC

GL1 — CLEAR, INSULATED TEMPERED GLAZING
GL2 — CLEAR, INSULATED GLAZING
GL3 — CLEAR, INTERIOR GLAZING, 45 MIN FR RATING

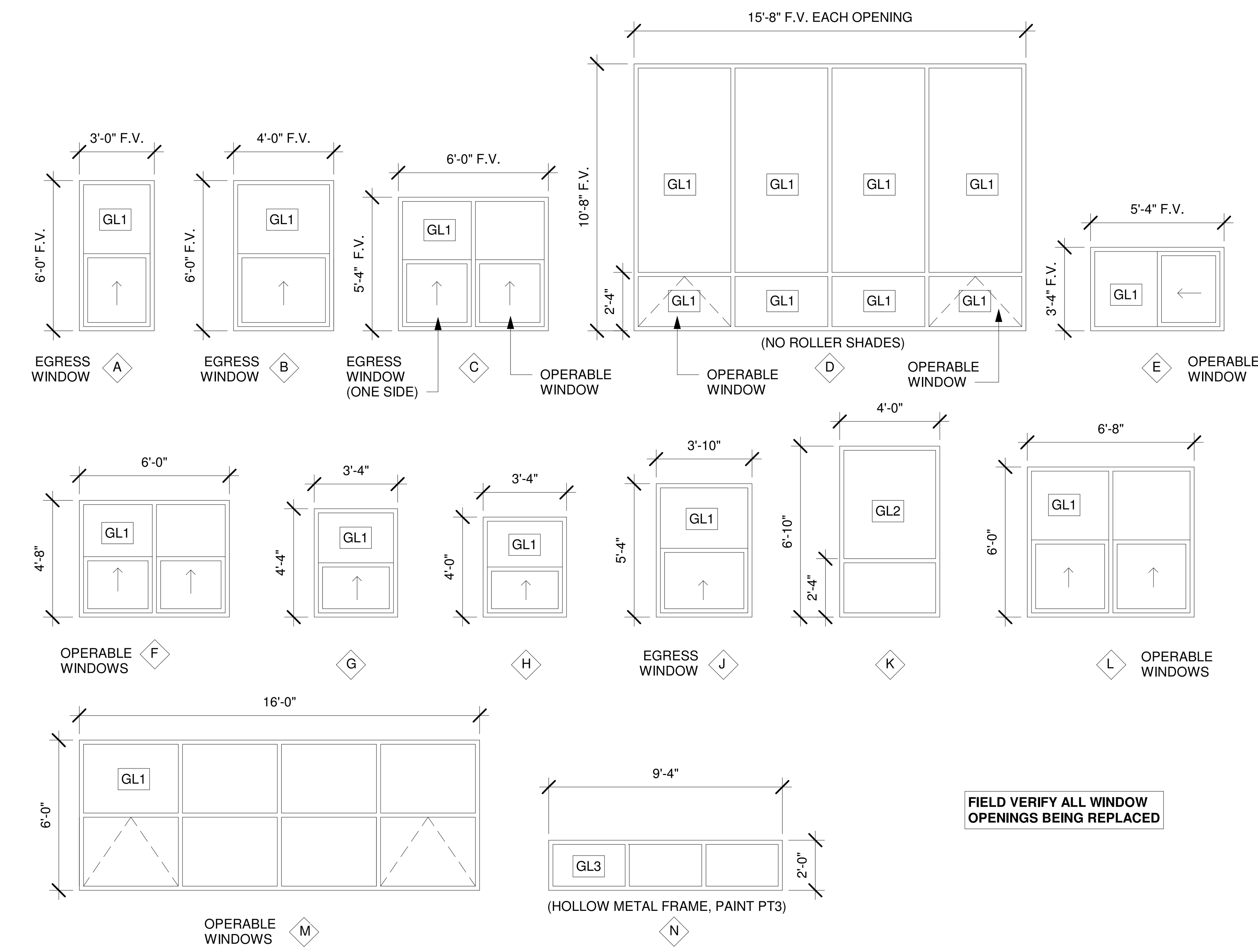
GENERAL NOTES TO WDW. SCHEDULE

1. WINDOW DESIGNATION: SEE FLOOR PLAN(S) FOR LOCATION OF WINDOWS.
2. FRAME: SEE CODE TO "DOOR/WINDOW SCHEDULE" FOR DEFINITION OF DESIGNATIONS IN MATERIAL COLUMN. SEE "WINDOW TYPES" FOR DESCRIPTION OF DESIGNATIONS IN FRAME TYPE COLUMN.
3. WINDOW: SEE CODE TO "DOOR/WINDOW SCHEDULE" FOR DEFINITION OF DESIGNATIONS IN GLAZING COLUMN.
4. SIZE: SIZE IS GIVEN AS WIDTH x HEIGHT OF ROUGH OPENING. ALL SIZES MUST BE VERIFIED IN FIELD.
5. ALL INTERIOR AND EXTERIOR WINDOWS WITHIN 24" TO THE VERTICAL EDGE OF AN INTERIOR OR EXTERIOR DOOR OR OPERABLE WINDOW MUST CONTAIN TEMPERED SAFETY GLASS.
6. ARROWS INDICATE OPERABLE WINDOW. EGRESS WINDOWS LOCATIONS ARE MARKED ON WINDOW LEGEND. INSTALL SCREENS AT OPERABLE WINDOWS. DO NOT INSTALL SCREENS AT EGRESS WINDOWS.

WINDOW SCHEDULE

WINDOW TYPE	MATERIAL	WIDTH	HEIGHT	HEAD	JAMB	SILL	REMARKS
A	AL	3' - 0"	6' - 0"	4/A7.2	2 & 3/A7.2	1/A7.2	
B	AL	4' - 0"	6' - 0"	5/A7.2	2/A7.2	1/A7.2	
C	AL	6' - 0"	5' - 4"	4/A7.2	2/A7.2	1/A7.2	
D	AL	15' - 8"	10' - 8"	8/A7.2	7/A7.2	6/A7.2	
E	AL	5' - 4"	3' - 4"	9/A7.2	11/A7.2	12/A7.2	
F	AL	6' - 0"	4' - 8"	5/A7.2 SIM	2/A7.2	1/A7.2	
G	AL	3' - 4"	4' - 4"	9/A7.2	11/A7.2	10/A7.2	
H	AL	3' - 4"	4' - 0"	9/A7.2	11/A7.2	10/A7.2	
J	AL	3' - 10"	5' - 4"	9/A7.2	11/A7.2	10/A7.2	
K	AL	4' - 0"	6' - 10"	5/A7.2 SIM	11/A7.2	10/A7.2	
L	AL	6' - 8"	6' - 0"	13/A7.2	13/A7.2	13/A7.2	
M	AL	16' - 0"	6' - 0"	13/A7.2	13/A7.2	13/A7.2	
N	HM	9' - 4"	2' - 0"	14/A7.2	14/A7.2	14/A7.2	

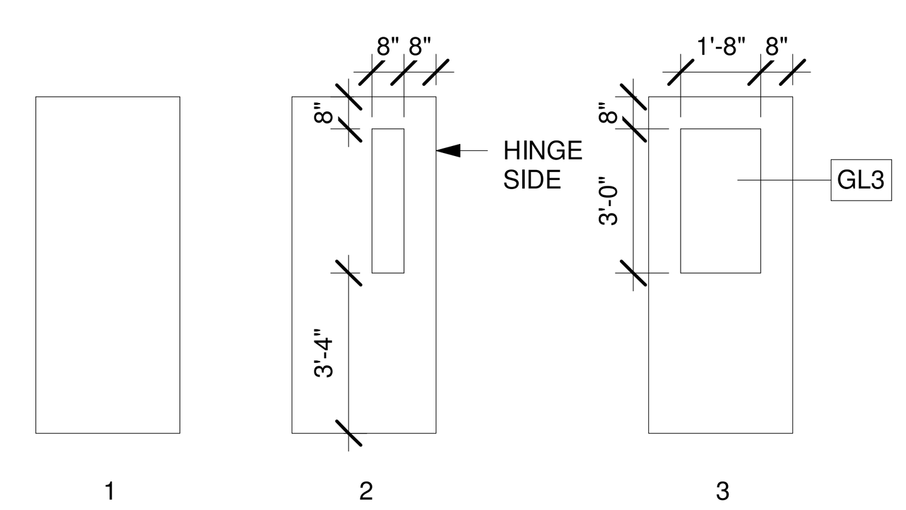
WINDOW TYPES



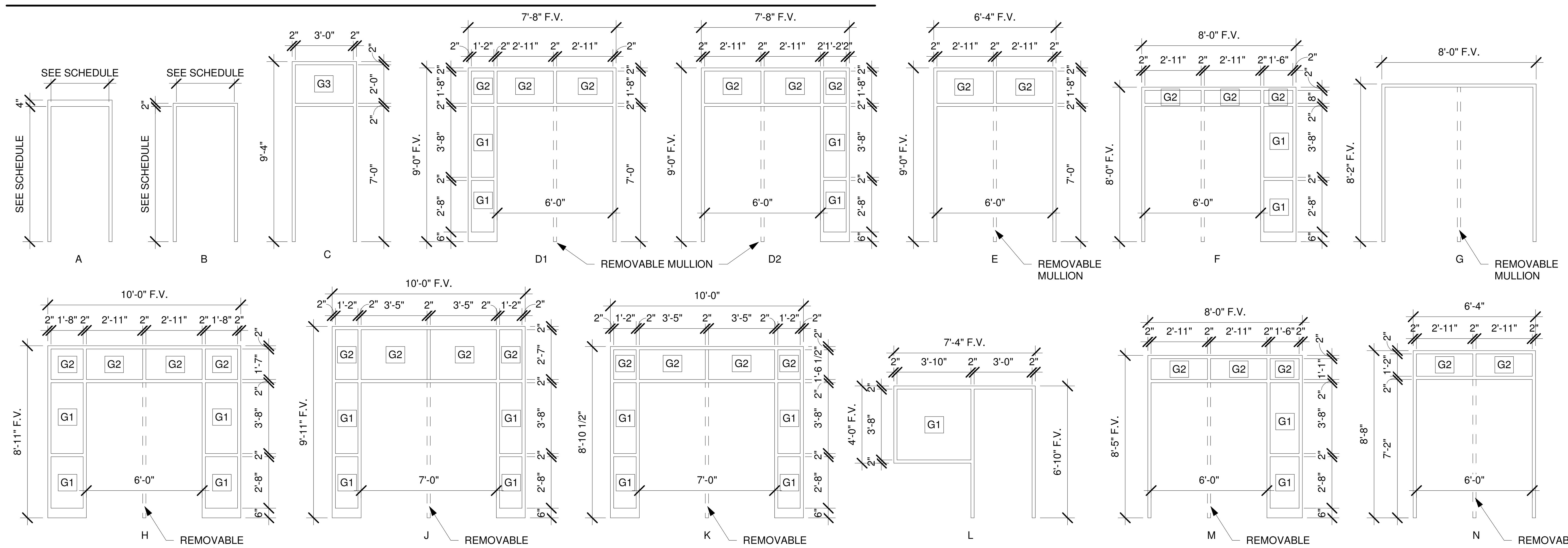
FIELD VERIFY ALL WINDOW OPENINGS BEING REPLACED

ADDITIONAL NOTES:
-INCLUDE ROLLER SHADES AT ALL NEW EXTERIOR WINDOWS (NO ROLLER SHADES AT TYPE D)
-INCLUDE IMPACT RESISTANT SECURITY FILM AT EXTERIOR PERIMETER WINDOWS AND DOOR GLAZING (NOT REQUIRED ON COURTYARD WINDOWS)
-EGRESS WINDOWS REQUIRE 5.7 SF OF CLEAR OPENING. CONFIRM ALL CLEARANCES PRIOR TO FABRICATION.

DOOR TYPES



DOOR FRAMES



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BANGOR TOWNSHIP SCHOOL DISTRICT
PHASE 3A - MIDDLE SCHOOL ADDITION & RENOVATIONS
3281 KIESEL RD, BAY CITY, MI 48706
PROJECT NO. 22-011

NO.	REVISIONS	DATE
0	FOR CONSTRUCTION	12/20/24

BY	
DESIGN	-
DRAWN	-
CHECKED	-
APPROVED	-

WINDOW, DOOR & ROOM FINISH SCHEDULES

A4.0

DEMOLITION KEYNOTES

A. REMOVE EXISTING LIGHTING FIXTURES, SWITCHES AND OCCUPANCY SENSORS IN THIS ROOM/AREA. EXTEND/RECONFIGURE EXISTING BRANCH CIRCUIT WIRING TO FEED AND CONTROL NEW LIGHTING FIXTURES. SEE NEW WORK PLAN FOR NEW FIXTURE LOCATIONS.

B. EXISTING UNIT VENTILATOR TO BE REMOVED AND RELOCATED BY MECHANICAL TRADES. DISCONNECT UNIT FROM POWER. EXTEND EXISTING BRANCH CIRCUITRY AND CONDUIT TO NEW LOCATION. SEE NEW WORK PLAN FOR NEW LOCATION.

C. REMOVE AND RELOCATE EXISTING EXIT SIGN. EXTEND EXISTING BRANCH CITRCUITRY TO NEW LOCATION AS REQUIRED. SEE NEW WORK PLAN FOR NEW LOCATION.

D. EXITING UNIT VENTILATOR/CABINET UNIT HEATER TO BE REMOVED BY MECHANICAL TRADES. DISCONNECT UNIT FROM POWER COMPLETE. REMOVE EXISTING BRANCH CIRCUITRY BACK TO SOURCE, WHERE ACCESSIBLE.

E. REMOVE EXISTING RECEPTACLE COMPLETE. REMOVE BRANCH CIRCUITRY AND CONDUIT BACK TO SOURCE, WHERE ACCESSIBLE.

F. REMOVE EXISTING FIRE ALARM PULL STATION COMPLETE AND TURN OVER TO OWNER. REMOVE EXISTING WIRING BACK TO SOURCE, WHERE ACCESSIBLE.

G. REMOVE EXISTING LIGHT FIXTURE COMPLETE. REMOVE EXISTING BRANCH CIRCUITRY BACK TO SOURCE WERE ACCESSIBLE.

H. REMOVE EXISTING LIGHT BELL AND TURN OVER TO OWNER. REMOVE EXISTING WIRING BACK TO SOURCE, WHERE ACCESSIBLE.

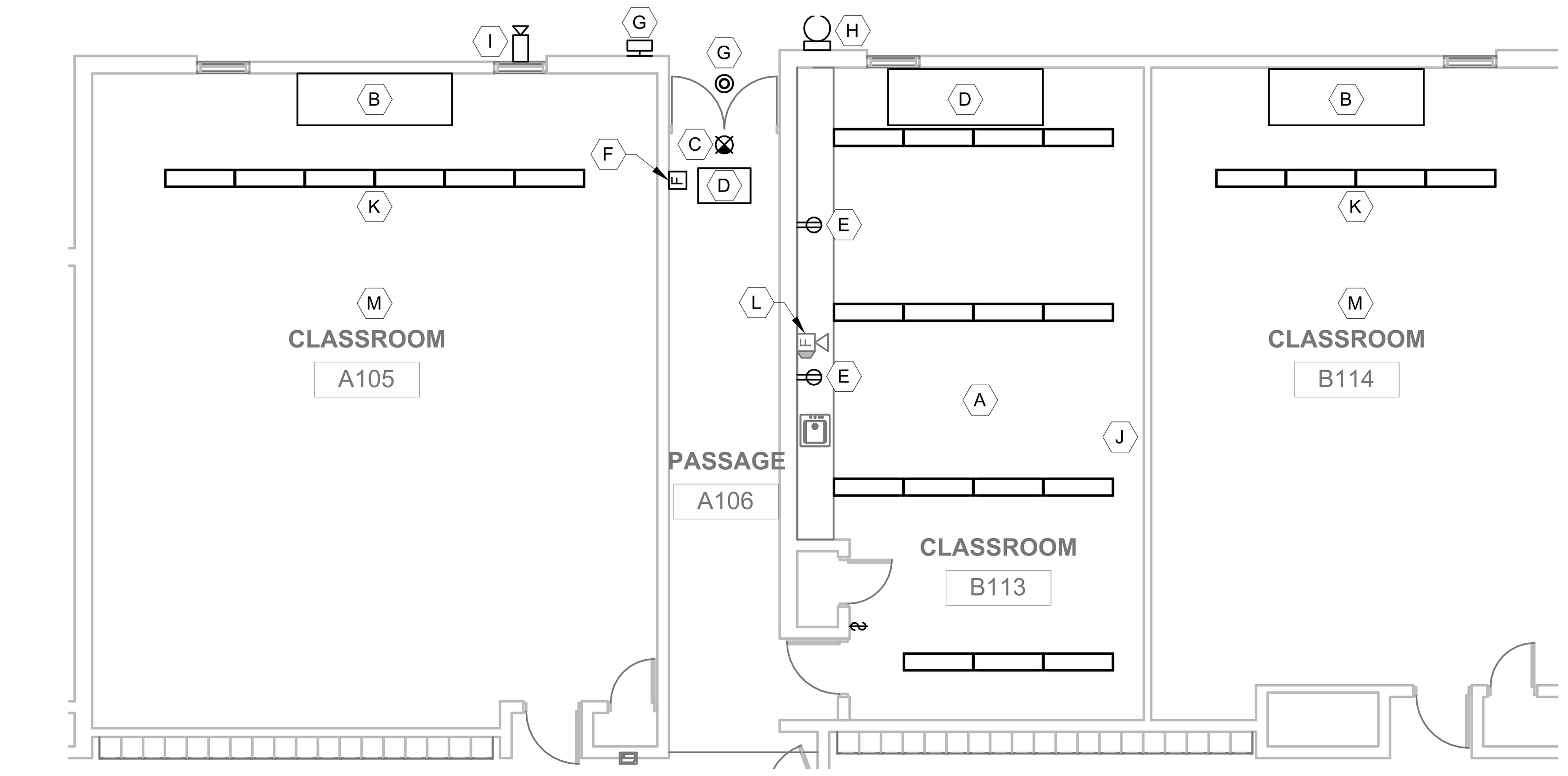
I. REMOVE EXISTING SECUIRTY CAMERA AND TURN OVER TO OWNER. REMOVE EXISTING WIRING/CABLING BACK TO SOURCE, WHERE ACCESSIBLE.

J. REMOVE EXISTING SHORT-THROW PROJECTOR AND TURN OVER TO OWNER.

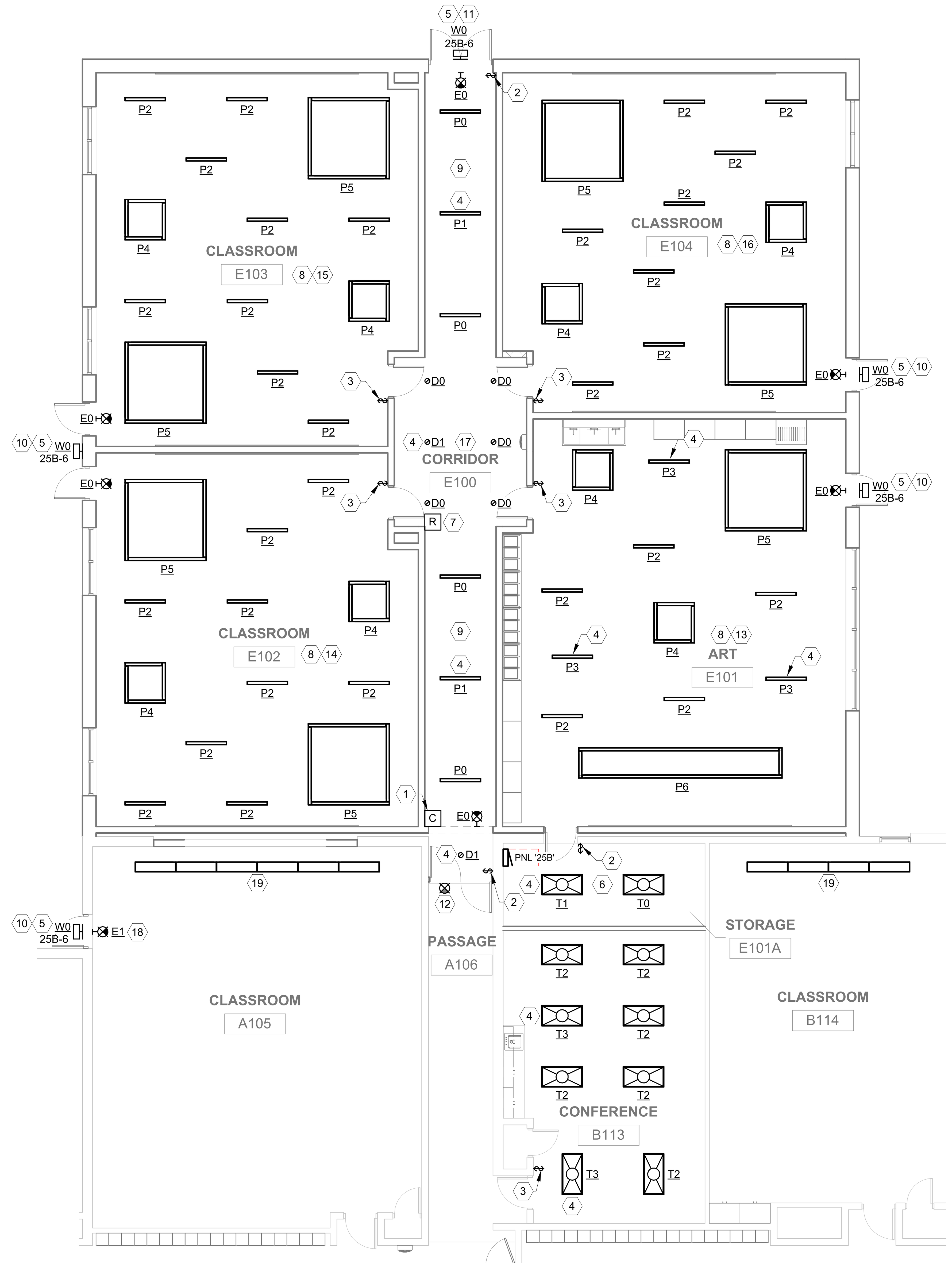
K. REMOVE AND RELOCATED EXISTING ROW OF LIGHT FIXTURES IN THIS ROOM BEING EFFECTED BY UNIT VENTILATOR RELOCATION AS REQUIRED. EXTEND EXISTING BRANCH CIRUCITRY AND CONTROL WIRING AS REQUIRED. SEE NEW WORK PLAN FOR NEW LOCATION.

L. EXISTING FIRE ALARM DEVICE TO REMIAN.

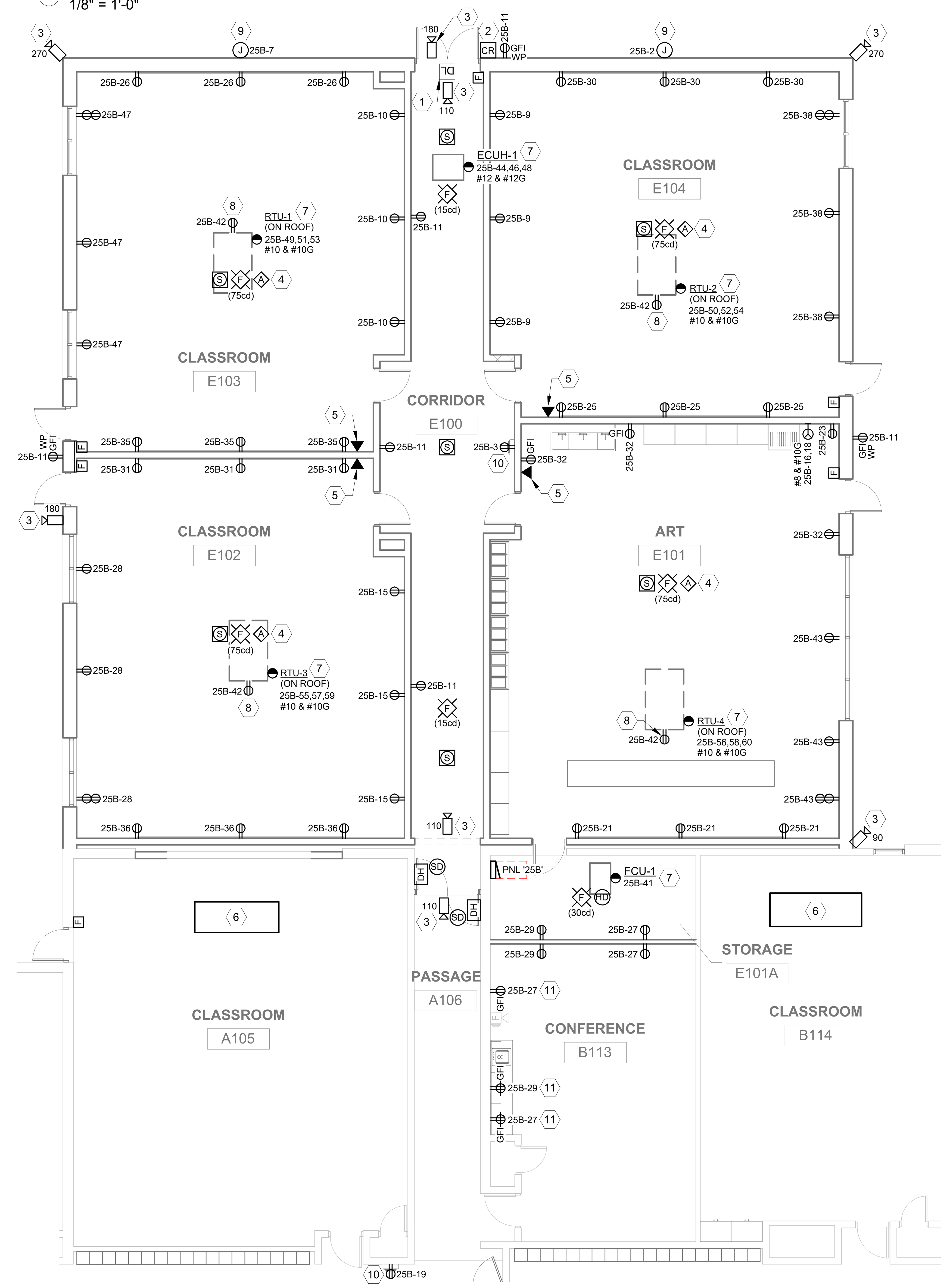
M. ARCHITECTURAL TRADES TO REMOVE PORTION OF CEILING FOR UNIT VENTILATOR RELOCATION. TEMPORARILY SUSPEND AND REINSTALL LIGHT FIXTURES IN AREA OF REWORK AS REQUIRED. COORDINATE WORK WITH ARCHITECTURAL TRADES.



1 ELECTRICAL DEMO PLAN - ADDITION AREA
1/8" = 1'-0"



2 ELECTRICAL NEW WORK LIGHTING PLAN - ADDITION AREA
1/8" = 1'-0"



3 ELECTRICAL NEW WORK POWER PLAN - ADDITION AREA
1/8" = 1'-0"

LIGHTING KEYNOTES

1. PROVIDE COOPER LIGHTING SOLUTIONS WAVELINX PRO #WAC2-120 OR EQUAL WIRELESS AREA CONTROLLER. RUN CAT 6 LINE CABLE BACK TO NETWORK RACK.
2. PROVIDE COOPER LIGHTING SOLUTIONS WAVELINX PRO #W1L-W OR EQUAL WALL STATION.
3. PROVIDE COOPER LIGHTING SOLUTIONS WAVELINX PRO #W4S-RL-W OR EQUAL WALL STATION.
4. LIGHT FIXTURE TO BE PROVIDED WITH INTEGRAL EMERGENCY BACK-UP BATTERY. FIXTURE TO BE CONTROLLED BY WALL STATION AND AUTOMATICALLY TURN 'ON' IN THE EVENT OF NORMAL POWER FAILURE.
5. LIGHT FIXTURE TO BE PROVIDED WITH INTEGRAL EMERGENCY BACK-UP BATTERY. FIXTURE TO BE CONTROLLED BY INTEGRAL PHOTOCELL SENSOR AND AUTOMATICALLY TURN 'ON' IN THE EVENT OF NORMAL POWER FAILURE.
6. DISABLE AUTOMATIC CONTROLS OF FIXTURES IN THIS ROOM.
7. PROVIDE WAVELINX PRO RSP-P-010-347 OR EQUAL RELAY SWITCHPACK. RELAY TO CONTROL ALL DOWNLIGHTS IN CORRIDOR E100, PROVIDE REQUIRED CONTROL WIRING.
8. MOUNT PENDANT FIXTURES IN THIS ROOM AT 9'-4" A.F.F. TO BOTTOM OF FIXTURE.
9. MOUNT PENDANT FIXTURES IN THIS ROOM AT 9'-8" A.F.F. TO BOTTOM OF FIXTURE.
10. MOUNT FIXTURE AT 9'-4" ABOVE GROUND TO TOP OF FIXTURE.
11. MOUNT FIXTURE AT 10'-0" ABOVE GROUND TO BOTTOM OF FIXTURE.
12. RELOCATED EXIT SIGN.
13. FEED ALL LIGHT FIXTURES IN THIS ROOM TO CIRCUIT '25B-14'.
14. FEED ALL LIGHT FIXTURES IN THIS ROOM TO CIRCUIT '25B-13'.
15. FEED ALL LIGHT FIXTURES IN THIS ROOM TO CIRCUIT '25B-17'.
16. FEED ALL LIGHT FIXTURES IN THIS ROOM TO CIRCUIT '25B-12'.
17. FEED ALL LIGHT FIXTURES IN THIS ROOM TO CIRCUIT '25B-6'.
18. PROVIDE POWER TO NEW EXIT FIXTURE FROM EXISTING ROOM LIGHTING CIRCUIT, AHEAD OF ANY SWITCH LEG.
19. RELOCATED ROW OF LIGHT FIXTURES.

POWER KEYNOTES

1. CONNECT DOOR STRIKE PROVIDED BY DOOR HARDWARE SUPPLIER TO EXISTING BUILDING ACCESS CONTROL SYSTEM. PROVIDE ALL REQUIRED WIRING, DEVICES, PROGRAMMING, ETC. FOR A COMPLETE AND OPERABLE SYSTEM.
2. NEW CARD READER TO BE PROVIDED BY OWNER THROUGH HONOR SECURITY, INSTALLED BY ELECTRICAL CONTRACTOR. PROVIDE OUTDOOR RATED, SINGLE GANG, DEEP BOX, AT 44" A.F.F. WITH 3/4" CONDUIT STUB TO JUNCTION BOX ABOVE CORRIDOR CEILING SPACE. PROVIDE 1-CATEGORY 6 CABLE FROM JUNCTION BOX TO NETWORK TERMINATION RACK, SEE KEYNOTE 4/E0.1.
3. NEW IP SECURITY CAMERA TO BE PROVIDED BY OWNER THROUGH HONOR SECURITY, INSTALLED BY ELECTRICAL CONTRACTOR. PROVIDE 1-CATEGORY 6 CABLE FROM LOCATION TO NETWORK TERMINATION RACK. TERMINATE BOTH ENDS PER SPECIFICATIONS.
4. WIRELESS ACCESS POINT ANTENNA LOCATION, ANTENNAE PROVIDED AND INSTALLED BY OWNER. PROVIDE 1-CATEGORY 6 CABLE FROM OUTLET LOCATION TO NETWORK TERMINATION RACK. TERMINATE BOTH ENDS PER SPECIFICATIONS. PROVIDE 10' SLACK CABLE AT LOCATION COILED NEATLY ABOVE ACCESSIBLE CEILING SPACE.
5. PROVIDE SINGLE GANG, DEEP BOX, WITH 3/4" CONDUIT STUB TO CORRIDOR SPACE, PROVIDE PLASTIC BUSHINGS ON CONDUIT ENDS. PROVIDE 2-CATEGORY 6 (DATA) AND 1-CATEGORY 6 (VOICE) CABLES FROM OUTLET TO NETWORK TERMINATION RACK. TERMINATE BOTH ENDS PER SPECIFICATIONS.
6. RELOCATED UNIT VENTILATOR.
7. PROVIDE HARDWIRE CONNECTION INDICATED TO MECHANICAL UNIT'S MANUFACTURER PROVIDED INTEGRAL DISCONNECT SWITCH.
8. PROVIDE WEATHERPROOF, GFCI RECEPTACLE ON OR NEAR ROOFTOP UNIT. PROVIDE BRANCH CIRCUITRY INDICATED AS REQUIRED TO FEED RECEPTACLE.
9. PROVIDE 2-GANG JUNCTION BOX WITH BRANCH CIRCUITRY INDICATED TO FEED FUTURE ELECTRONIC DISPLAY. MOUNT AT 10'-0" TO BOTTOM OF BOX. PROVIDE (1) CATEGORY-6 CABLE FROM BOX LOCATION TO NETWORK RACK. TERMINATE BOTH ENDS PER SPECIFICATIONS. PROVIDE 10'-0" SLACK CABLE AT LOCATION COILED NEATLY INSIDE BUILDING BENEATH STRUCTURE. PROVIDE BLANK COVERPLATE.
10. PROVIDE GFI PROTECTION FOR RECEPTACLE SERVING 'EFB' AT BREAKER.
11. PROVIDE WIREMOLD 700 (WHITE), OR EQUAL, SURFACE MOUNTED RACEWAY TO SUPPLY NEW RECEPTACLE.

ARCHITECTURE ENGINEERING CONSULTING
INTEGRATED DESIGNS, INC.

BANGOR TOWNSHIP SCHOOL DISTRICT
PHASE 3 - MIDDLE SCHOOL ADDITION & RENOVATIONS
3281 KIESEL RD, BAY CITY, MI 48706
PROJECT NO. 22-011

NO.	REVISIONS	DATE
0	FOR CONSTRUCTION	12.20.24

	BY	DATE:
DESIGN	SNS	12.16.24
DRAWN	SNS	12.09.24
CHECKED	AJM	12.16.24
APPROVED	AJM	12.09.24

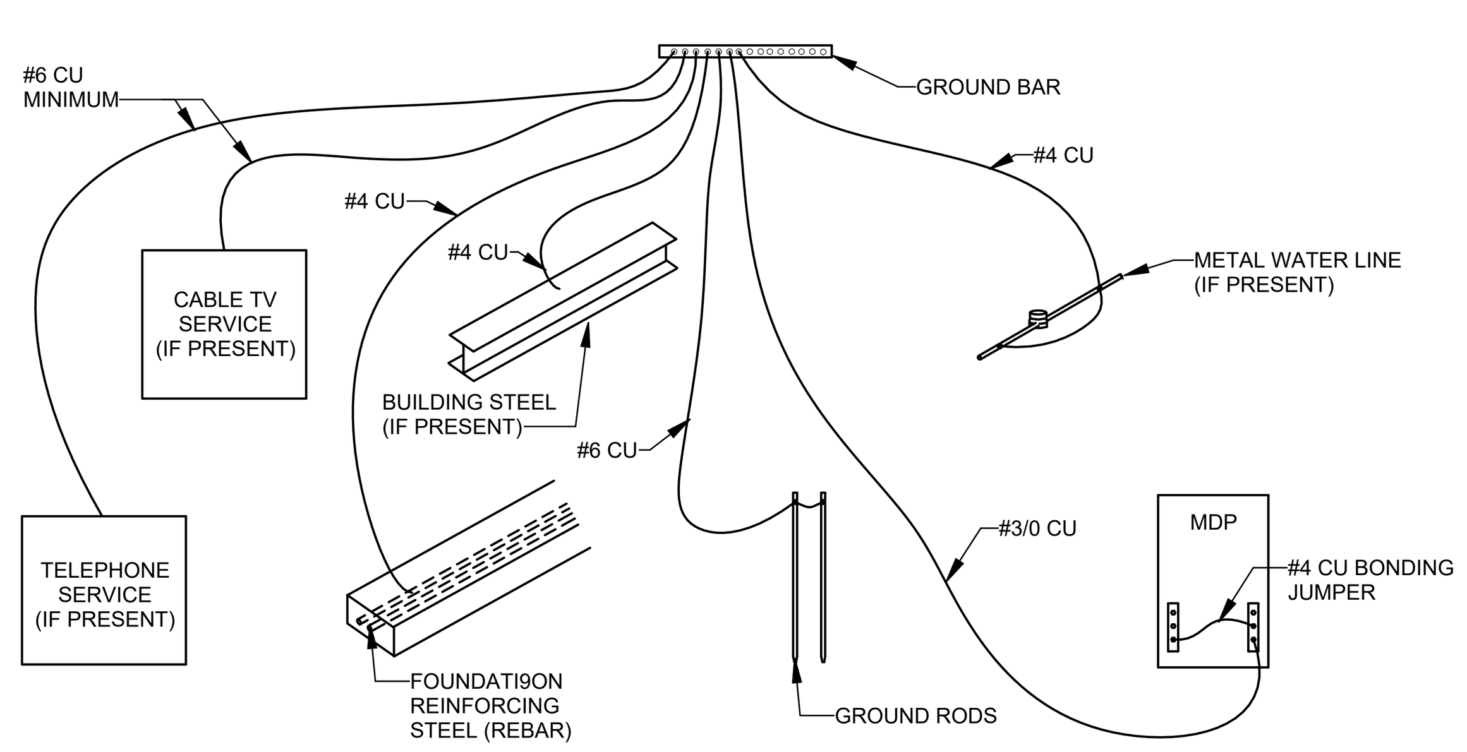
ELECTRICAL ADDITION AREA PLANS

E2.0

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP TYPE	MANUFACTURER	MODEL NUMBER	VOLT	WATTS	NOTES
D0	RECESSED DOWNLIGHT	LED	1. HALO 2. LITHONIA LIGHTING 3. VANTAGE LIGHTING	1. HC6-20-D010 HM6-0525-840 61-WD-BB-BF 2. LDN6-AL02-SWW1-L06-BR-TRBL-LSS-WD-MVOLT-UGZ1 3. VED60CR0-U-20-40K-V6060-BLK-ZDM	UNV	21 VA	5,6
D1	RECESSED DOWNLIGHT (EM)	LED	1. HALO 2. LITHONIA LIGHTING 3. VANTAGE LIGHTING	1. HC6-20-D010-REM14 HM6-0525-840 61-WD-BB-BF 2. LDN6-AL02-SWW1-L06-BR-TRBL-LSS-WD-MVOLT-UGZ1-E10WCPR 3. VED60CR0-U-20-40K-V6060-BLK-ZDM-REM	UNV	21 VA	1,5,6
D2	6" SURFACE DOWNLIGHT	LED	1. HALO 2. JUNO 3. LIGHTOLIER	1. SMD6R-12-9S-WH-E 2. JSF-7IN 10LM-SWW5-90CRI-MVOLT ZT-WH 3. SD-9R-12-Z10-SCT-U-W	UNV	15 VA	5
D3	12" SURFACE DOWNLIGHT	LED	1. HALO 2. JUNO 3. LIGHTOLIER	1. SMD12R-20-9S-WH-E 2. JSF-13IN 18LM-SWW5-90CRI-MVOLT ZT-WH 3. SD-14R-SLM-Z10-SCT-U-W	UNV	26 VA	5
D4	12" SURFACE DOWNLIGHT (EM)	LED	1. HALO 2. JUNO 3. LIGHTOLIER	1. SMD12R-20-9S-WH-E-EM 2. JSF-13IN 18LM-SWW5-90CRI-MVOLT ZT-WH-EM 3. SD-14R-SLM-Z10-SCT-U-W-EM	UNV	26 VA	1,5,6
E0	EXIT SIGN	LED	1. SURE-LITES 2. LITHONIA LIGHTING 3. MULE LIGHTING	1. APX7RG 2. EXRG EL M6 3. UX-B-W	UNV	1 VA	1,3
E1	EXIT SIGN (EM)	LED	1. SURE-LITES 2. LITHONIA LIGHTING 3. MULE LIGHTING	1. APCH7RG 2. ECC-R 3. UXC-W-REM	UNV	3 VA	1,3
P0	4' LINEAR PENDANT	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLED-1200-80-40-SO-4-BLK-UNV-DP-1-CA(48")-WC(WaveLinxPro) 2. VIA4P-D-HLO-FH-NA-SW-80CRI-1200LMF-NA-40K-4FT0IN-UNV-D1-1C-ACS-B-AN 3. 29-0-1-940-48-LN-04-D-E-1-CS-B	UNV	39 VA	7
P1	4' LINEAR PENDANT (EM)	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLED-1200-80-40-SO-4-BLK-UNV-DP-1-B(120)-CA(48")-WC(WaveLinxPro) 2. VIA4P-D-HLO-FH-NA-SW-80CRI-1200LMF-NA-40K-4FT0IN-UNV-D1-1C-1EMB-ACS-B-AN 3. 29-0-1-940-48-LN-04-D-E-1-B-CS-B	UNV	39 VA	1,7
P2	4' LINEAR PENDANT	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLED-1200-80-40-SO-4-BLK-UNV-DP-1-CA(48")-WC(WaveLinxPro) 2. VIA4P-D-HLO-FH-NA-SW-80CRI-1200LMF-NA-40K-4FT0IN-UNV-D1-1C-ACS-B-AN 3. 29-0-1-940-48-LN-04-D-E-1-CS-B	UNV	39 VA	7
P3	4' LINEAR PENDANT (EM)	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLED-1200-80-40-SO-4-BLK-UNV-DP-1-B(120)-CA(48")-WC(WaveLinxPro) 2. VIA4P-D-HLO-FH-NA-SW-80CRI-1200LMF-NA-40K-4FT0IN-UNV-D1-1C-1EMB-ACS-B-AN 3. 29-0-1-940-48-LN-04-D-E-1-B-CS-B	UNV	39 VA	1,7
P4	4' SQUARE PENDANT	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLEDPAT-S(4')-1200-80-40-SO-EX-BLK-UNV-DP-1-CA(48")-WC(WaveLinxPro) 2. VIA4PPAT-D-HLO-FH-SW-80CRI-1200LMF-40K-4FT SQUARE-(90)-UNV-D1-1C-ACS-B-AN 3. 29-0-1-940-4800LM/4FT-LN-4FTX4FT SQUARE-D-E-1-N-(INTERACT WIRELESS)-B	UNV	155 VA	7
P5	8' SQUARE PENDANT	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLEDPAT-S(8')-1200-80-40-SO-EX-BLK-UNV-DP-1-CA(48")-WC(WaveLinxPro) 2. VIA4PPAT-D-HLO-FH-SW-80CRI-1200LMF-40K-8FT SQUARE-(90)-UNV-D1-1C-ACS-B-AN 3. 29-0-1-940-4800LM/4FT-LN-8FTX8FT SQUARE-D-E-1-N-(INTERACT WIRELESS)-B	UNV	310 VA	7
P6	20'X3' RECTANGULAR PENDANT	LED	1. AXIS 2. LUMENWERX 3. LEDALITE	1. TB4DLEDPAT-R(20'X3')-1200-80-40-SO-EX-BLK-UNV-DP-1-CA(48")-WC(WaveLinxPro) 2. VIA4PPAT-D-HLO-FH-SW-80CRI-1200LMF-40K-20FTX3FT RECTANGLE-UNV-D1-1C-ACS-B-AN 3. 29-0-1-940-4800LM/4FT-LN-20FTX3FT RECTANGLE-D-E-1-N-(INTERACT WIRELESS)-B	UNV	446 VA	7
S0	SURFACE LINEAR	LED	1. METALUX 2. LITHONIA LIGHTING 3. DAY-BRITE	1. 4SNX-63SL-LW-UNV-L840-CD-1-WPS-U 2. CLX-L48-7000LM-SEF-FDL-MVOLT-GZ1-40K-80CRI-RES7-WH 3. FSS-4-70L-840-UNV-DIM-SWZCS FKR-126 FSSDEK	UNV	44 VA	7
S1	SURFACE LINEAR (EM)	LED	1. METALUX 2. LITHONIA LIGHTING 3. DAY-BRITE	1. 4SNX-63SL-LW-UNV-L840-CD-1-EL14W-WPS-U 2. CLX-L48-7000LM-SEF-FDL-MVOLT-GZ1-40K-80CRI-E10W-RES7-WH 3. FSS-4-70L-840-UNV-DIM-EMLED-SWZCS FKR-126 FSSDEK	UNV	44 VA	1,7
T0	2X4 LAY-IN	LED	1. METALUX 2. LITHONIA LIGHTING 3. DAY-BRITE	1. 24CZ2-55-UNV-L840-CD1-WPS-U 2. 2BLT4-60L-ADP-GZ1-LP840-RES7-WH 3. 2-FGX-G-54L-840-2-R-UNV-DIM-SWZCS IRT9015	UNV	41 VA	7
T1	2X4 LAY-IN (EM)	LED	1. METALUX 2. LITHONIA LIGHTING 3. DAY-BRITE	1. 24CZ2-55-UNV-EL14W-L840-CD1-WPS-U 2. 2BLT4-60L-ADP-GZ1-LP840-RES7EM-EL14L-WH 3. 2-FGX-G-54L-840-2-R-UNV-DIM-BSL10LST-SWZCS IRT9015	UNV	41 VA	1,7
T2	2X4 LAY-IN	LED	1. METALUX 2. LITHONIA LIGHTING 3. LEVITON	1. 24SR-LD2-48-C-UNV-L840-CD1-WPS-U 2. ENVX-2x4-HRGC-4800LM-80CRI-40K-MIN1-ZT-MVOLT-NLTAIR2-APDT 3. OCR-CONCAVE-8-40K-050L-UNV-CENTER SPINE-(INTERACT WIRELESS)	UNV	38 VA	7
T3	2X4 LAY-IN (EM)	LED	1. METALUX 2. LITHONIA LIGHTING 3. LEVITON	1. 24SR-LD2-48-C-UNV-EL14W-L840-CD1-WPS-U 2. ENVX-2x4-HRGC-4800LM-80CRI-40K-MIN1-ZT-MVOLT-E15WLCP-NLTAIR2-APDT 3. OCR-CONCAVE-8-40K-050L-UNV-CENTER SPINE-B39-(INTERACT WIRELESS)	UNV	38 VA	1,7
W0	AREA LIGHT (EM) (WL)	LED	1. LUMARK 2. LITHONIA LIGHTING 3. LSI INDUSTRIES	1. XTOR6B-PC1-CBP 2. WDGE2 LED-P1-40K-80CRI-T3M-MVOLT-E20WC-PE-DDBXD 3. WPSLL=6L-UNV-50-PCI 120-CWBB-BRZ	120 V	58 VA	2,4

NOTES TO LIGHTING FIXTURE SCHEDULE:
(EM) - EMERGENCY, (WL) - WET LOCATION LISTED
1. FIXTURE TO BE PROVIDED WITH INTEGRAL EMERGENCY BACK UP BATTERY.
2. FIXTURE TO BE PROVIDED WITH INTEGRAL COLD WEATHER EMERGENCY BACK UP BATTERY.
3. SELECT RED COLOR OPTION IN FIELD.
4. FIXTURE TO BE PROVIDED WITH AND CONTROLLED BY INTEGRAL PHOTOCELL.
5. SELECT 4000K CCT OPTION IN FIELD IF APPLICABLE.
6. SELECT 2000 LUMEN OUTPUT OPTION IN FIELD.
7. FIXTURE TO BE PROVIDED WITH INTEGRAL SENSOR AND CONTROL MODULES COMPATIBLE WITH WIRELESS LIGHTING CONTROL SYSTEM.



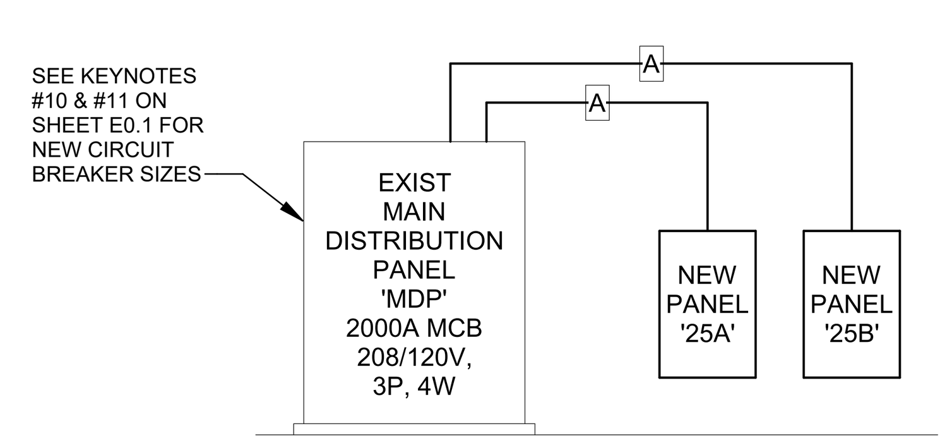
GROUNDING/BONDING DETAIL

N.T.S.

'MDP' LOAD CALCS	
EXISTING LOAD	267.80 KVA
ADDED LOAD	63.99 KVA
TOTAL LOAD	331.79 KVA
TOTAL CAPACITY OF SERVICE REMAINING	20.24 %

NOTE:
PROVIDE GROUNDING PER NATIONAL ELECTRICAL CODE (NEC) ARTICLE 250, #4 CU MINIMUM GROUNDING ELECTRODE CONDUCTOR SIZE. CONNECT TO BUILDING ADDITION FOUNDATION REINFORCING STEEL AND WATER SERVICE AND RUN BACK TO EXISTING MDP IN BOILER ROOM.

FEEDER SCHEDULE		
A	2 1/2"C - 4 #250 KCMIL THHN & 1 #2 GND (CU) [NEW]	3"C - 4 #500 KCMIL THHN & 1 #1/0 GND (AL) [NEW]



PARTIAL ELECTRICAL RISER DIAGRAM

N.T.S.

Branch Panel: 25A

Location: CORRIDOR D104 **Volts:** 120/208 Wye **Mains Type:** CU
Supply From: MDP **Phases:** 3 **Mains Rating:** 100 A
Mounting: SURFACE **Wires:** 4 **MCB Type:** MLO
Enclosure: NEMA 1 **A.I.C.:** 22 KAIC **MCB Rating:** N/A

Notes:
PROVIDE NEW PANEL PER SPECS.

CKT	Circuit Description	Trip A	Poles	A kVA		B kVA		C kVA		Poles	Trip A	Circuit Description	CKT
1	EBF-1 +	20	1	0.18	0.54					1	20	RCPT - CLASSROOM A116	2
3	RCPT - CLASSROOM D106	20	1			0.72	0.72			1	20	RCPT - CLASSROOM D107	4
5	RCPT - CLASSROOM D108	20	1					0.72	0.72	1	20	RCPT - CLASSROOM D109	6
7	RCPT - CLASSROOM C100	20	1	0.54	0.36					1	20	RCPT - CLASSROOM D101	8
9	RCPT - CLASSROOM D102	20	1			0.36	0.36			1	20	RCPT - CLASSROOM C100	10
11	RCPT - CLASSROOM D103	20	1					0.36	0.36	1	20	RCPT - CLASSROOM D100	12
13	RCPT - CLASSROOM A116	20	1	0.36	0.54					1	20	RCPT - CLASSROOM D112	14
15	RCPT - CLASSROOM D113	20	1			0.54	0.54			1	20	RCPT - CLASSROOM D111	16
17	RCPT - CLASSROOM D114	20	1					0.54	0.54	1	20	RCPT - CLASSROOM D111	18
19	RCPT - CLASSROOM D109	20	1	0.54	0.54					1	20	RCPT - CLASSROOM D106	20
21	RCPT - CLASSROOM D107	20	1			0.54	0.54			1	20	RCPT - CLASSROOM D101	22
23	RCPT - CLASSROOM D108	20	1					0.54	0.54	1	20	RCPT - CLASSROOM D102	24
25	RCPT - CLASSROOM D100	20	1	0.54	0.72					1	20	RCPT - CLASSROOM D112	26
27	RCPT - CLASSROOM D113	20	1			0.72	0.00			1	20	SPARE	28
29	RCPT - CLASSROOM D114	20	1					0.72	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00					1	20	SPARE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	0.00					3	30	SURGE PROTECTION DEVICE *	38
39	SPACE	--	1			--	0.00			--	--	--	40
41	SPACE	--	1					--	0.00	--	--	--	42
			Total Load:	4860 VA		5040 VA		5040 VA					
			Total Amps:	41 A		42 A		42 A					

Legend:
+ PROVIDE GFCI PROTECTED BRANCH CIRCUIT BREAKER.
* PROVIDE SURGE PROTECTION DEVICE CIRCUITED TO BREAKER PER SPECIFICATIONS.

Panel Totals	
Total Conn. Load:	14940 VA
Total Conn.:	42 A

Branch Panel: 25B

Location: STORAGE E101A **Volts:** 120/208 Wye **Mains Type:** CU
Supply From: MDP **Phases:** 3 **Mains Rating:** 225 A
Mounting: SURFACE **Wires:** 4 **MCB Type:** MLO
Enclosure: NEMA 1 **A.I.C.:** 22 KAIC **MCB Rating:** N/A

Notes:
PROVIDE NEW PANEL PER SPECS.

CKT	Circuit Description	Trip A	Poles	A		B		C		Poles	Trip A	Circuit Description	CKT
1	RCPT - CLASSROOM A101	20	1	0.36	0.50					1	20	FUTURE ELECTRONIC DISPLAY	2
3	EBF-1 +	20	1			0.18	0.36			1	20	RCPT - CLASSROOM A104	4
5	RCPT - CLASSROOM A102	20	1					0.36	0.67	1	20	LTG - CORRIDOR E100, EXTERIOR	6
7	FUTURE ELECTRONIC DISPLAY	20	1	0.50	0.54					1	20	RCPT - CLASSROOM A101	8
9	RCPT - CLASSROOM E104	20	1			0.54	0.54			1	20	RCPT - CLASSROOM E103	10
11	RCPT - CORRIDOR E100, EXTERIOR	20	1					1.08	1.24	1	20	LTG - CLASSROOM E104	12
13	LTG - CLASSROOM E102	20	1	1.28	1.38					1	20	LTG - CLASSROOM E101	14
15	RCPT - CLASSROOM E102	20	1			0.54	4.90			2	50	KILN - CLASSROOM E101	16
17	LTG - CLASSROOM E103	20	1					1.28	0.00	--	--	--	18
19	EBF-1 +	20	1	0.18	0.36					1	20	RCPT - CLASSROOM A103	20
21	RCPT - ART E101	20	1			0.54	0.54			1	20	RCPT - CLASSROOM A103	22
23	RCPT -KILN DOWNDRAFT FAN ART...	20	1					0.18	0.00	1	20	SPARE	24
25	RCPT - CLASSROOM E104	20	1	0.54	0.54					1	20	RCPT - CLASSROOM E103	26
27	RCPT - CONF B113, STOR E101A	20	1			0.72	0.72			1	20	RCPT - CLASSROOM E102	28
29	RCPT - CONF B113, STOR E101A	20	1					0.54	0.54	1	20	RCPT - CLASSROOM E104	30
31	RCPT - CLASSROOM E102	20	1	0.54	0.54					1	20	RCPT - ART E101	32
33	SPARE	20	1			0.00	0.00			1	20	SPARE	34
35	RCPT - CLASSROOM E103	20	1					0.54	0.54	1	20	RCPT - CLASSROOM E102	36
37	RCPT - CLASSROOM A102	20	1	0.54	0.72					1	20	RCPT - CLASSROOM E104	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	FCU-1	15	1					0.33	0.72	1	20	RCPT - ROOFTOP	42
43	RCPT - ART E101	20	1	0.72	0.77					3	20	ECUH-1	44
45	SPARE	20	1			0.00	0.77			--	--	--	46
47	RCPT - CLASSROOM E103	20	1					0.72	0.77	--	--	--	48
49	RTU-1	30	3	1.59	1.59					3	30	RTU-2	50
51	--	--	--			1.59	1.59			--	--	--	52
53	--	--	--					1.59	1.59	--	--	--	54
55	RTU-3	30	3	1.59	1.59					3	30	RTU-4	56
57	--	--	--			1.59	1.59			--	--	--	58
59	--	--	--					1.59	1.59	--	--	--	60
61	SPACE	--	1	--	--					1	--	SPACE	62
63	SPACE	--	1			--	--			1	--	SPACE	64
65	SPACE	--	1					--	--	1	--	SPACE	66
67	SPACE	--	1	--	0.00					3	30	SURGE PROTECTION DEVICE *	68
69	SPACE	--	1			--	0.00			--	--	--	70
71	SPACE	--	1					--	0.00	--	--	--	72
			Total Load:	16274 VA		16725 VA		15768 VA					
			Total Amps:	136 A		140 A		131 A					

Legend:
+ PROVIDE GFCI PROTECTED BRANCH CIRCUIT BREAKER.
* PROVIDE SURGE PROTECTION DEVICE CIRCUITED TO BREAKER PER SPECIFICATIONS.

Panel Totals	
Total Conn. Load:	48750 VA
Total Conn.:	135 A

MARQUETTE OFFICE:
1201 W. BARAGA AVENUE
MARQUETTE, MI 49855
PHONE: (906)228-4480 FAX: (906)228-7524
BRIGHTON OFFICE:
8571 W. GRAND RIVER AVE., SUITE 600
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BANGOR TOWNSHIP SCHOOL DISTRICT
PHASE 3 - MIDDLE SCHOOL ADDITION & RENOVATIONS
3281 KIESEL RD, BAY CITY, MI 48706
PROJECT NO. 22-011

NO.	REVISIONS	DATE
0	FOR CONSTRUCTION	12.20.24

	BY	DATE:
DESIGN	SNS	12.16.24
DRAWN	SNS	12.09.24
CHECKED	AJM	12.16.24
APPROVED	AJM	12.09.24

ELECTRICAL RISER AND SCHEDULES

E3.0