Delton Kellogg Schools

SECTION 00 01 10
TABLE OF CONTENTS

DIVISION 00 – BIDDING & CONTRACT REQUIREMENTS

DIVISION 27 – TECHNOLOGY SYSTEMS

DIVISION 28 – ELECTRONIC SAFETY & SECURITY

APPENDICES

END OF SECTION

SECTION 00 11 16
INVITATION TO BID

PART 1 - GENERAL

1.01 WORK INCLUDED: DISTRICT TECHNOLOGY RENOVATIONS

A. Delton Kellogg Schools (Owner) is seeking bids for the purchase and installation of new building access, security and classroom multimedia equipment and installation. Proposed systems shall be configured and installed to service Owner's classrooms across multiple instructional facilities, and as described herein.

B. Project: DISTRICT TECHNOLOGY RENOVATIONS

C. Owner: Delton Kellogg Schools
327 N. Grove Street
Delton, Michigan 49046

D. Designer: Communications by Design, Inc.

E. Sites of Work:

1. Delton Kellogg Elementary
327 N. Grove Street
Delton, Michigan 49046

1.02 GENERAL DESCRIPTION OF PROJECT SEQUENCE

A. Sequences and dates specified herein are for information only and indicate the plan and intent of the Owner. Actual dates shall be established based on final award of project.

B. Sequence of operations shall be established by the Contractor within the guidelines established by the Owner as required to meet schedules.

C. Schedule:

1. Request for Bid Distributed: August 26, 2022

2. Pre-Bid Meeting: September 6, 2022 at 1:00pm

3. Intent to Bids Due: September 8, 2022 at 5:00pm

4. Question and Clarification Deadline: September 9, 2022 at 5:00pm

5. Public Bids Due: September 16, 2022 at 1:00pm

1.03 TYPES OF BIDS

A. Bids shall be submitted in total and with required detail for each item bid and as is required herein, and include all portions of the work identified for the individual bid package as specified herein. Bids shall be made on unaltered bid forms as included herein. Bidder shall fill in all blank spaces and the bid shall be signed by a legal officer or agent authorized to bind the bidder to a contract.

1.04 PRE-BID CONFERENCE

A. A pre-bid conference will be held. A discussion of the project and review of bid documents will be followed by a site review and an opportunity to ask questions. Attendance is highly encouraged for all contractors interested in bidding on any components or portions of this project. Attendance at the pre-bid conference will be a factor considered during evaluation of bids.

B. Time: September 6, 2022 at 1:00pm

C. Location: Delton Kellogg Middle School – Northeast Entrance
Admin Office
6325 Delton Road
Delton, MI 49046

D. Any drawings identified in the table of contents herein will be distributed and reviewed at this conference.

E. Physical building inspections of sites of work will be provided for at this time.

1.05 TIME AND PLACE OF BID RECEPTION

A. Physically sealed bids for the base bid work will be received at the district office and read aloud at a public opening. Bids arriving after the appointed time as determined by the Owner's representative conducting the public opening, shall be returned unopened. Bids will be accepted beginning forty-eight (48) hours prior to the appointed opening time provided they are in sealed packages and addressed as specified herein.

B. Bid Receipt Deadline: September 16, 2022 at 1:00pm

C. Bid Opening Location: Delton Kellogg Middle School - Northeast Entrance
Admin Office
6325 Delton Rd.
Delton, MI 49046

D. Faxed or electronically delivered bids will not be accepted.

1.06 EXAMINATION AND PROCUREMENT OF DOCUMENTS

A. Specifications and any relevant Drawings may be obtained from the Technology Designer. Contractors may obtain copies by documented request to Communications by Design, Attn: Rebecca Szilagy. Requests may be made by:

1. Writing – 4101 Sparks Drive Grand Rapids, Michigan 49546

2. Email – rszilagy@cbdconsulting.com

1.07 BID SECURITY

A. Bid security equal to five percent (5%) of the total bid amount, must accompany each base bid in accordance with the Instruction to Bidders.

B. Bid security shall be either a Bid Bond issued by a company licensed in the State of Michigan to furnish bid security or Certified Check made payable to the Owner.

1.08 PERFORMANCE BOND COVERAGE

A. Selected Contractor(s) will be required to provide a performance bond and payment bond in an amount equal to one hundred percent (100%) of the bid amount including any accepted alternates at the Owner's discretion. Such bonds shall be issued by surety licensed by the State of Michigan and acceptable to the Owner.

1.09 OWNER'S RIGHT TO REJECT BIDS

A. The Owner reserves the right to reject any and/or all bids. The Owner reserves the right to accept a bid, or portion thereof by issuance of a valid purchase order within ninety (90) calendar days following the bid opening. No bids may be withdrawn during this time without the specific approval of the Owner.

B. Withdrawal of any Bids after the opening time without specific approval by Owner may result in forfeiture of required bid security by Bidder.

1.010 DEFINITIONS

A. "Owner" is intended to mean Delton Kellogg Schools, a general powers school district.

B. For purposes of this project, the terms "Architect", "Engineer" and "Designer" are used synonymously to refer to Communications by Design, Inc., a Michigan Corporation.

C. The term “Bidder” refers to any organization properly and accurately submitting a complete “Intent to Bid Form” prior to the required time specified herein and subsequently properly submitting completed set of bid documents as specified herein.

D. The term “Contractor” herein is a reference to the firm(s) eventually selected by the Owner to provide the intended system(s), or any portion thereof, and fulfill the terms of the contract.

E. The term Contract is a reference to the collective set of documents, drawings, diagrams, Owner’s Purchase Order, Addenda and all other materials as provided for herein defining arrangement between Owner and Contractor.

F. The term Addenda (or Addendum) are that portion of the Contract consisting of modifications, amendments, deletions or substitutions to the contract documents issued prior to the execution of the Contract.

END OF SECTION

SECTION 00 40 00
BID FORMS

Intent to Bid Form

Complete and submit the following form if you have interest or intend to submit a Bid for this project. Unaltered and completed forms must be received on or before 5:00 PM on September 8, 2022. Only bidders returning a completed "Intent to Bid Form" will be notified of required addenda.

Company Information

Name: _____

Address Line1: _____

Address Line2: _____

City, State and Zip Code _____

Primary Contact Information

Name: _____

Phone No.: _____

Fax. No.: _____

E-Mail Address: _____

Portions of the bid for which you will be responding:

- ☐ Section 27 41 16 – Multimedia Systems
- ☐ Section 28 13 00 – Building Access System
- ☐ Section 28 23 00 - Video Monitoring System

Submit unaltered and completed form to:

Rebecca Szilagy
Communications by Design, Inc.
rszilagy@cbdconsulting.com

SEALED BID LABEL

Separate, or fold over, the label on the line below, and affix to the exterior of sealed container so information is clearly visible for Bid Submission. Ensure label is attached in a manner to prevent accidental removal or defacement. Label shall serve as sole identification for sealed bid at submission.

BID TO: Delton Kellogg Schools
Attention: Mr. Andrew Nurenberg
327 N. Grove Street
Delton, Michigan 49046

BID FROM: _____

_____

_____

PROJECT: DISTRICT TECHNOLOGY RENOVATIONS
TECHNOLOGY BID #2744

INCLUDING ADDENDA: Addendum No._____Dated_____
Addendum No._____Dated_____

DUE: September 16, 2022 at 1:00pm

BID FORM

BID TO: Delton Kellogg Schools
Attention: Mr. Andrew Nurenberg
327 N. Grove Street
Delton, Michigan 49046

BID FROM: _____

_____

_____

PROJECT: DISTRICT TECHNOLOGY RENOVATIONS
TECHNOLOGY BID #2744

The undersigned, having familiarized themselves with all local conditions affecting the cost of work, and having examined the site and all applicable Bidding Documents herein, and herein referenced, including, but not limited to, all addenda issued thereto, hereby propose to furnish all labor, material, equipment, applicable taxes and services required for proper completion of each of the following categories of this project for the sum of:

Bid Category _____ Title_____

_____Dollars ($_____).
Said amount written above constituting the Base Bid

Bid Category _____ Title_____

_____Dollars ($_____).
Said amount written above constituting the Base Bid

Bid Category _____ Title_____

_____Dollars ($_____).
Said amount written above constituting the Base Bid

TAXES:
Bid sum includes all applicable taxes.

ALLOWANCES:
Base bid includes all applicable allowance cost(s) as set forth herein.

COST OF BONDS:
Bid sum includes cost of furnishing a Performance Bond and Labor and Material Payment Bond, each in the amount of one hundred percent (100%) of the bid.

ACKNOWLEDGEMENT OF ADDENDA:
The following addenda have been received, are hereby acknowledged, and their execution is included in both base bid and alternate bids herein.

Addendum No._____Dated_____ Addendum No._____Dated_____

ALTERNATES:
Based bid amount may be increased or decreased in accordance with each of the following alternate bids as may be selected, following procedures stated herein. Voluntary Alternates shown below are identified and described in detail on appropriate attachment(s) as referenced herein.

Voluntary Alternate A _____

Voluntary Alternate B_____

Voluntary Alternate C _____

Voluntary Alternate D _____

Voluntary Alternate E_____

PRINCIPAL SUBCONTRACTORS
As required herein, the following Subcontractors are proposed to be used for this project:

Legal Name:_____Work Proposed_____

Legal Name:_____Work Proposed_____

Legal Name:_____Work Proposed_____

BID SECURITY:
Accompanying this Bid, as required herein, is a bid security in the form of Certified Check/Cashier's Check/Bidder's Bond in the amount of:

_____ Dollars ($_____),
payable to the Owner, which it is agreed, shall be retained as liquidated damages, not as a penalty, by the Owner, if the undersigned fails to execute the Contract in conformity with the form of Contract incorporated and referenced herein and fails to furnish specified bonds within ten (10) days after date of issuance of a Letter of Intent to the undersigned.

If awarded the Contract, the undersigned agrees to commence work within ten (10) calendar days after date of issuance of a Purchase Order, which shall be considered as the notice to proceed, and agrees to complete the work in accordance with the schedule herein.

FAMILIAL DISCLOSURE:
Accompanying this Bid, as required herein, is a legally executed and notarized Michigan Familial Disclosure Statement.

EXCEPTIONS:
Bidder takes no exception to terms, conditions, specifications and/or any other requirements herein unless expressly noted, and specifically identified as provided for herein on unaltered Contract Exception form accompanying this Bid.

SIGNATORY AUTHORITY:

The undersigned certifies they are an authorized agent of the bidding entity, and legally able to bind the bidding entity to the terms, conditions and responsibilities of this, and all referenced bid documents. Furthermore, the undersigned acknowledges an understanding that non-compliance of this authority or any other bidding requirements may result in forfeiture of bid security, dismissal of consideration of bid submitted, and/or personal liability against the signatory.

AGREEMENT:

The undersigned agree(s) to provide the post-bid information required within ten (10) days after notification of a Letter of Intent and to execute an agreement for work covered by this Bid on the Owner's standard Purchase Order for which terms and conditions are expanded to include all Bidding Documents and subsequent addenda issued thereto.

In submitting this bid, it is understood that the Owner reserves the right to reject any or all bids. It is further agreed that this bid is binding for a period of Ninety (90) days from the opening thereof.

Respectfully submitted,

Date: _____

Firm Name: _____

By: _____

Signed: _____

Title: _____

Official Address: _____

_____

Telephone Number: _____

Fax Number: _____

Primary Contact Email Address: _____

(If Corporation, affix Seal)

Michigan Familial Relationship Disclosure Statement

In accordance with Section 1267 of Michigan Revised School Code this sworn and notarized statement of an authorized representative, discloses any familial relationship between the owner and/or any employee of the Bidder, and any member of the project Owner's governing Board(s) or Superintendent(s).

If any conflict of interest is discovered subsequent to submission of bid, written disclosure shall be submitted to the project Owner within seven (7) days of discovery. The project Owner reserves the right to immediately terminate any contract with Bidder upon notification of a conflict of interest. Upon such termination, the project Owner shall compensate Bidder only for the value of any goods or services provided to the Owner prior to such termination as determined by Designer.

(Check only one Box Below)

☐ It is hereby acknowledged and certified by Bidder that no familial relationship exists between the owner or any employee of the Bidder and any member of the project Owner's governing Board(s) or Superintendent(s).

☐ A familial relationship exists between the owner or an employee of the Bidder and a member of the project Owner's governing Board(s) or Superintendent(s). The person(s) and the relationship(s) are as follows:

Bidder	***Board or Superintendent***
_____	_____
_____	_____
_____	_____
_____	_____

Bidder Authorized Representative:

Bidder: _____

Representative's Signature: _____

Print or Type Name: _____

Representative's Title: _____

Subscribed and sworn this _____ day of _____, 2022.

In the County of _____ State of _____

By _____ Seal or Stamp:
Notary Public Signature

My commission expires on: _____

IRAN LINKED BUSINESS AFFIDAVIT

All Bids shall be accompanied by a sworn statement disclosing any Iran Linked Business relationship that exists within the owners, including its officers, directors and employees.

The undersigned, owner or authorized officer of _____(the bidder), pursuant to Michigan Public Act No. 517 of 2012, the "Iran Linked Business" requirement provided in the Delton Kellogg Schools Proposals hereby represents and warrants that the bidder, including its officers, directors and employees, is not an "Iran Linked Business" within the meaning of the applicable Public Act, and that in the event bidder is awarded a contract as a result of this RFB, the bidder will not become an "Iran Linked Business" at any time during the course of performing under the contract. The bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000.00 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the District investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on future Requests for Bids for three (3) years from the date that it is determined that the person has submitted the false certification.

There is not an "Iran Linked Business" that exists within the bidder and/or owner, officers, directors and employees.

Bidder

_____

[Company Name]

_____

[Signature]

_____

[Title]

This instrument was acknowledged before me, a Notary Public,

in and for _____ County,

_____ on this _____day of _____, 20__,

_____

[Notary Public Signature]

My Commission expires: _____

Acting in the County of: _____

REFERENCES

Customer name: _____
Address: _____
City/State/Zip: _____
Contact name: _____
Contact title: _____
Phone: _____
E-mail: _____
Scope of project: _____
_____
_____
Date of completion: _____

Customer name: _____
Address: _____
City/State/Zip: _____
Contact name: _____
Contact title: _____
Phone: _____
E-mail: _____
Scope of project: _____
_____
_____
Date of completion: _____

Customer name: _____
Address: _____
City/State/Zip: _____
Contact name: _____
Contact title: _____
Phone: _____
E-mail: _____
Scope of project: _____
_____
_____
Date of completion: _____

CONTRACT EXCEPTIONS

Check one Box

☐ Bidder takes no exception to, and agrees to comply with all sections, terms, conditions and/or requirements of the Contract Documents.

☐ Bidder proposes the following exceptions to the Contract Documents:

Paragraph Number	***Explanation***
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

NOTE:
Exception(s) to any bid sections, terms, conditions and/or requirements deemed excessive for any reason by the Owner and/or Designer may result in disqualification of Bid.

SCHEDULE OF VALUES/BID FORM

(Bidder may submit version of only this form with slight variation. All information in this form is required for each division/category of work being bid. Submit a completed separate form for each division/category of work clearly delineating on the form the division/category of work for that form. Form submitted must materially match below both in content and format. Electronic version of this form for each project section/division/category being bid is required with bid package as Microsoft Excel compatible spreadsheet on a USB drive. Failure to provide appropriate and complete SCHEDULE OF VALUES for each division/category of work, as determined by the Owner and/or Designer, may result in disqualification of Bid.)

Bidder: ____Bid Division: 27 41 16

ID	***Qty***	***Part Number***	***Mfg and Description***	***Unit Cost***	***Unit Labor Cost***	***Total Proposed Cost***
			PROJECT MANAGEMENT			
			TRAINING			
			BONDS AND INSURANCE			
			GRAND TOTAL (Must match base bid)			

SCHEDULE OF VALUES/BID FORM

(Bidder may submit version of only this form with slight variation. All information in this form is required for each division/category of work being bid. Submit a completed separate form for each division/category of work clearly delineating on the form the division/category of work for that form. Form submitted must materially match below both in content and format. Electronic version of this form for each project section/division/category being bid is required with bid package as Microsoft Excel compatible spreadsheet on a USB drive. Failure to provide appropriate and complete SCHEDULE OF VALUES for each division/category of work, as determined by the Owner and/or Designer, may result in disqualification of Bid.)

Bidder: ____ Bid Division: 28 13 00

ID	***Qty***	***Part Number***	***Mfg and Description***	***Unit Cost***	***Unit Labor Cost***	***Total Proposed Cost***
			PROJECT MANAGEMENT			
			TRAINING			
			BONDS AND INSURANCE			
			GRAND TOTAL (Must match base bid)			

SCHEDULE OF VALUES/BID FORM

(Bidder may submit version of only this form with slight variation. All information in this form is required for each division/category of work being bid. Submit a completed separate form for each division/category of work clearly delineating on the form the division/category of work for that form. Form submitted must materially match below both in content and format. Electronic version of this form for each project section/division/category being bid is required with bid package as Microsoft Excel compatible spreadsheet on a USB drive. Failure to provide appropriate and complete SCHEDULE OF VALUES for each division/category of work, as determined by the Owner and/or Designer, may result in disqualification of Bid.)

Bidder: ____Bid Division: 28 23 00

ID	*Qty*	*Part Number*	*Mfg and Description*	*Unit Cost*	*Unit Labor Cost*	*Total Proposed Cost*
			PROJECT MANAGEMENT			
			TRAINING			
			BONDS AND INSURANCE			
			GRAND TOTAL (Must match base bid)			

END OF SECTION

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 OWNERSHIP

A. Bidders prepare and provide bids without any cost to the Owner and/or Designer. Once opened, bids become the sole property of the Owner. Bidders have no claim to, or ownership of bids opened. Bids become subject to all legal statutes including, if applicable, United States and Michigan Freedom of Information Acts and related laws.

1.02 COMPLIANCE

A. This document establishes the primary system(s) design configuration. The Bidder's bid response shall include all services, supplies, components and equipment required to provide a complete turnkey system(s) which meets or exceeds all specifications for each given bid item being proposed.

B. Owner prefers to enter into a contract with a single bidder for all materials for completion of this project, but shall consider combinations of portions of bids from various bidders. The Owner reserves the right to award portions of the project to multiple bidders who will be required to cooperate with one another in order to complete the work.

C. By their response, Bidders agree to comply with all sections, terms, conditions and/or requirements of the contract documents except as expressly noted, and specifically identified by paragraph number on the unaltered Contract Exceptions Bid Form. Exceptions to any bid sections, terms, conditions and/or requirements deemed excessive by the Owner and/or Bid Coordinator may disqualify Bid.

D. In compliance with the Freedom of Information Act (FOIA), the Owner shall make bid documents available for public review after issuance of purchase order to the successful bidder/s.

E. In connection with the execution of this Contract, Contractor and any Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, or national origin.

F. Negligence in preparation, improper preparation, errors in, or omissions from Bids shall not relieve Bidder from fulfillment of any and all obligations and requirements of the Contract Documents.

G. All Bid documents and worksheets must be completed in detail and submitted together on time.

H. All documents constituting the entire present agreement shall be construed in accordance with and governed by the laws of the State of Michigan.

I. Designer shall have authority for interpretation of Contract Documents. In the event terms, provisions or any other portion of the Contract Documents is/are in dispute, Designer shall have full and final authority to interpret the Contract Documents, and such interpretation shall be final and binding.

J. In the event of a conflict between any terms or conditions in any of the documents comprising the entire present Agreement, the terms and conditions set forth in this document shall take precedence.

1.03 NOTICE AND RESPONSE

A. Upon notification of Bidder being considered as a finalist, the Bidder shall provide to the Owner and Designer, within 48 hours, a current "Dunn and Bradstreet Supplier Evaluation Report" and other documentation as may be required of finalists herein and as requested by Owner and/or Bid Coordinator.

B. Bidder shall provide timely response to all requests from Designer and/or Owner regarding clarification and/or elaboration concerning, but not limited to its Bid as may be deemed relevant by the Owner and/or Designer.

1.04 PROTECTION AND SAFETY

A. Contractor shall continuously maintain adequate protection of all Work from damage and shall protect the Owner's property from injury or loss arising in connection with the execution of the Contract. Contractor shall make good any such damage, injury or loss, except such as may be directly caused by agents or employees of the Owner. The Contractor shall adequately protect adjacent property as required by law, by the Contract Documents, or as otherwise required, to cause no damage to them during the execution of the Contract. This requirement shall also apply to structures above and below ground as conditions of the site require.

B. Contractor shall be solely responsible for, and have control over means, methods, techniques, sequences and procedures for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the contract. Contractor shall take all necessary precautions for the safety of employees and visitors on the site of the Project and shall comply with applicable provisions of federal, state, and municipal safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and

progress of the Work, all necessary safeguards for the protection of workers and the community.

C. Contractor shall vigorously defend any and all suits that may be brought against the Owner by any person and/or entity, whether in the employ of the Contractor or not, for damage to property, and/or injury or death to persons alleged or claimed to have been caused by or through the performance of work.

1.05 DRAWINGS DIAGRAMS AND ILLUSTRATIONS

A. Drawings, Diagrams and Illustrations are diagrammatic in nature and indicate general arrangement and nature of systems and work included.

B. Floor plan drawings are provided to assist the contractor in preparing documentation and reports as required herein.

PART 2 - MATERIALS

2.01 VOLUNTARY ALTERNATES AND SUBSTITUTION OF SPECIFIED PRODUCTS

A. This Request for Bid describes a particular implementation. All Bids must provide pricing on the "base bid" as described herein. Voluntary alternatives providing comparable functionality with significant cost reduction and/or performance enhancement may be proposed. Voluntary alternatives are encouraged, but must be identified as "Voluntary Alternates" and detailed on unaltered Bid Forms contained herein. Voluntary Alternates may be further detailed and/or explained in attachments to the unaltered Bid Forms contained herein. Exceptions to the Request for Bid specifications must be clearly noted and explained for each Voluntary Alternate proposed.

B. No substitutions of specified products may be made without specific prior authorization by Designer and Owner. Individual bid divisions herein contain particular information related to acceptable manufacturer and product requirements.

C. Trade-in, equipment/license exchanges or other return allowances may be provided as a voluntary alternate. Trade-in, exchange or other return equipment allowances shall not be included in base bid amount.

PART 3 - EXECUTION

3.01 EXAMINATION OF DOCUMENTS AND SITE

A. Bidders shall carefully examine the Contract Documents and the construction site to obtain first-hand knowledge of existing conditions and requirements. No plea of ignorance of conditions that exist, or any other relevant matter

concerning work to be performed in the execution of work will be accepted as justification for failure to fulfill every detail of all requirements as described herein.

3.02 QUESTIONS, INTERPRETATIONS AND ADDENDA

A. Any bidder finding discrepancies between Drawings, Specifications and/or Bid Documents, or be in doubt as to the exact meaning of any provision or detail shall notify the Designer at once, and before the deadline for Questions and Clarifications. The Designer may then, at their option, issue Addenda clarifying same. The Designer is not responsible for oral instructions, or Bidder's/Contractor's misinterpretations of Drawings, Specifications and/or Bid Documents.

B. The Designer reserves the right to issue Addenda at any time up to thirty-six (36) hours prior to the scheduled bid opening. All such addenda shall become, upon issuance, an inseparable part of the Specification/Contract Documents. Each bidder shall incorporate within their bid all costs for items listed in any/all Addenda and shall acknowledge receipt and identifying number of each Addendum on the Bid Form and on the outside of the sealed bid container.

C. Addenda will be forwarded to each bidder who has received a copy of the Bidding Documents and has submitted "Intent to Bid Form".

3.03 BID SECURITY, BONDS AND INSURANCE

A. Bid Security, Performance and Payment Bonds are required on this project.

1. Bid security equal to five percent (5%) of the bid amount must accompany each bid in accordance with the Instruction to Bidders.

a. Bid security shall be either a Bid Bond issued by a company licensed in the State of Michigan to furnish bid security or Certified Check made payable to the Owner.

B. The selected Contractor will be required to provide a performance bond and a payment bond each in an amount equal to one hundred percent (100%) of the bid amount including any accepted alternates at the Owner's discretion.

1. The surety of the performance bond shall remain in effect until all acceptances and final contract close-out requirements herein have been executed by the Owner.

C. Contractor shall provide, prior to beginning any work at the sites, certificate of insurance for delivery to Owner indicating all required insurance coverage is in force.

1. Workers' Compensation and Employer's Liability Insurance

    a. Coverage A – Statutory

    b. Coverage B - $1,000,000 Per Accident

2. Broad Form Comprehensive General Liability Insurance (including – Premises, Elevators, Contractor's Protective Liability, Contractual, Products & Completed Operations – including Broad Form Extensions).

    a. Each Occurrence - $1,000,000

    b. General Aggregate - $2,000,000

    c. Products & Completed Operation Aggregate - $2,000,000

    d. Personal Injury & Advertising Injury - $1,000,000

    e. Fire Legal - $100,000

3. Sub-contractors Operations, Products – Completed Operations and Contractual Liabilities, plus such excess coverage as may be appropriate for the limits listed.

4. Comprehensive Automobile Liability Insurance (owned, hired, and non-owned automobiles).

    a. Bodily - $1,000,000 each Person and $1,000,000 each Occurrence

    b. Property Damage - $1,000,000

5. Furnish Owner with Contingent Liability Insurance Policy with coverage and liability limits the same as for Public Liability Insurance specified herein. Designate on policy as assured, only the Owner.

6. Furnish Owner with Contingent Property Damage Insurance Policy with coverage and liability limits the same as for Property Damage specified herein. Designate on policy as assured, only the Owner.

7. Policies shall include notification clause requiring ninety (90) days written notice to Owner in the event of policy cancellation, expiration, non-renewal, coverage reduction or other material change.

8. Contractor shall not commence work under the Contract until after all insurance required herein as been obtained and certificates for such are approved by Owner.

D. All such bonds and/or insurance shall be issued by surety licensed by the State of Michigan and acceptable to the Owner.

1. Insurance certificate(s) shall be signed by insurance agent licensed in the state of Michigan or a representative of the insurance company.

E. Contractor agrees to indemnify and hold harmless the Owner and Designer, including their agents and employees, from and against all claims, damages, losses and expenses, including, but not limited to, attorney fees arising out of, or resulting from the performance of the work to the fullest extent allowed by law on a comparison basis of fault.

3.04 MODIFICATION AND WITHDRAWL

A. Bids may be withdrawn and/or changed any time prior to the deadline for submission of bids. Bids may not be withdrawn or changed thereafter and shall be deemed a form offer continuing for ninety (90) calendar days. Bids receive after the deadline for submission will be returned unopened at the Owner's discretion.

B. Withdrawal of any Bid after the opening time without specific approval by Owner may result in forfeiture of required bid security by Bidder.

3.05 CODES, ORDINANCES, REGULATIONS AND RELATED

A. All labor and materials shall be furnished and installed in strict accordance with the latest applicable codes, ordinances and regulations of any governing body having jurisdiction over this project.

B. In the event the quality of labor and materials required by the Drawings and Specifications herein exceeds requirements of current applicable codes, ordinances and regulations, the Drawings and Specifications shall take precedence.

C. In the event the quality of labor and materials required by current applicable codes, ordinances and regulations having jurisdiction over this project exceeds that of the Drawings and Specifications herein, the applicable codes, ordinances and regulations shall take precedence.

D. The Contractor shall give all notices and comply with all codes, laws, ordinances, rules and regulations of any authority having jurisdiction, which bears on the performance of its work. This compliance includes, but is not limited to, the Michigan School Safety Initiative (PA129, PA130, PA131 and PA138) if applicable to work being performed.

E. The Contractor shall pay for all licenses, permits, taxes, and fees required for this project; and shall comply with all federal, state, local and Owner's codes, laws, ordinances, regulations and other requirements applicable to the work specified at no additional cost to the Owner. Contractor shall submit copies of all approved certificates and approvals to the Owner upon receipt.

3.06 SUB-CONTRACTOR AND MATERIAL SUPPLIER

A. The successful Bidder shall submit to the Owner and Designer a complete list of all sub-contractors and all material suppliers proposed to engage on the work. Sub-contracts shall not be awarded until after they have been approved by the Designer and Owner.

B. Finalist bidders may be required to submit additional details related to sub-contractors and suppliers within forty-eight (48) hours after the bid opening.

C. Names of any principal sub-contractors must be listed on the Bid Form.

D. All contracts made by the successful Bidder with Subcontractors shall be covered by the terms and conditions herein. The successful Bidder shall see to it that Subcontractors are fully informed in regard to these terms and conditions, and shall bind all subcontractors to the same terms and conditions. Failure to do so will absolve the Owner from any liability for additional cost due to subcontractor claims for additional cost, time or any claim(s) for additional cost by subcontractor(s).

3.07 BID RESPONSE FORMAT

A. Bidder shall provide complete Bid copies in two formats as described herein.

1. One (1) Hard copy format responses shall be in a bound tabulated format. Each response shall have tab indicators for each section.

2. One (1) Electronic copy format responses shall be submitted on a USB Drive, readable by a standard Microsoft Windows 10 workstation. Electronic media shall contain separate folders to organize response documentation as described herein. Files submitted electronically shall be ***Adobe Acrobat*** "PDF" format (SCHEDULE OF VALUES is additionally required to be on the disk in the appropriate folder as a spreadsheet and as described herein).

B. All Bid Response formats shall be clearly externally marked to include, but not be limited to:

1. Bidder identification.

2. Project Owner identification.

3. Project name.

4. Bid submission date.

C. Bid Responses shall include an index containing copies/PDF of a complete index of documents comprising Bid Response. Responses shall include, but not be limited to the following tabbed/folder sections:

1. Section 1 – Forms, which shall contain copies/PDF files of all required and completed bid forms.

    a. BID FORM

    b. Michigan Familial Relationship Disclosure Statement

    c. Iranian Linked Business Affidavit

    d. REFERENCES

    e. CONTRACT EXCEPTIONS

    f. SCHEDULE(s) OF VALUES

    g. BID BOND

2. Section 2 – Overview, which shall contain copies/PDF files of cover letter and/or executive overview.

3. Section 3 – Submittals, which shall contain copies/PDF files of all required and voluntary submittals.

4. Section 4 – Appendices, which shall contain copies/PDF files of other reference materials Bidder wishes to or is required to submit.

3.08 AWARD OF CONTRACT

A. The material proposed to be used for the completion of work, and the competency, solvency and responsibility of bidders will receive due consideration before award of contract. In the reception of bids for this work, the Owner incurs no obligation to accept the lowest, or any bid submitted. The right to accept or reject any and all bids or portion thereof is reserved by the Owner. The Owner reserves the right to require testimonial, accounting or legal documents pertaining to the solvency of a Contractor, or any other decision factor the Owner deems appropriate, prior to award of contract.

B. Owner reserves the right to select individual components from schedule of values independent of installation as may be determined in Owners best interest. Selected bidder may be required to install selected components provided by others.

C. Issuance of a Purchase Order by Owner in response to a valid bid shall be a Notice to Proceed, and shall become part of, but not limited to, all terms,

conditions and requirements herein. Notice to Proceed shall have the full effect of contract award, and shall make all terms, conditions, requirements and responsibilities of Bidder binding upon issuance. Notice to Proceed, once issued, shall become an inseparable part of the contract documents herein, and constitute both Bidder and Owner's acceptance of contract.

3.09 TIME, SCHEDULES, PROJECT MANAGEMENT, MEETINGS AND PLANS

A. Time is of the essence on this project. Award of contracts for this project will be contingent on the bidder's agreement to complete the work on or before the contract completion date stated herein.

B. All Contractors will commence work in such a manner and at such a time as to expeditiously interface with the work of other Contractors and will pursue the project diligently to completion. All Contractors will work in a cooperative manner with Owner and other Contractors.

C. Contractor shall appoint an overall Project Manager acceptable to Owner, with skills and experience deemed appropriate by the Owner for the scope and size of the project. Project Manager shall be responsible for the scheduling of all Contractor resources and attending all project meetings. Upon notification of Bidder being considered a finalist, the Bidder shall submit professional resume of proposed Project Manager within forty-eight (48) hours.

1. Project meetings shall be conducted at Owner's selected and identified location weekly and at Owner's and/or Designer's discretion.

2. Within five (5) days of Notice to Proceed (issuance of a Purchase Order by the Owner), Contractor's Project Manager shall provide to the Owner a critical flow path in the form of a "Gantt Chart" (or equivalent) indicating the proposed sequence of events and approximate beginning and completion dates in accordance with, compliance to, and coordinated with requirements herein.

3. Changes of the Project Manager during the project shall not be acceptable without prior written approval from the Owner.

4. It is the responsibility of the Contractor's Project Manager to schedule work, work out issues, ensure that all required products and services are delivered according to schedule and attend to any other matters required by the Owner in the interest of professional and timely completion of the project.

5. The appointed Project Manager, or a designee acceptable to the Owner, shall be in attendance of all project meetings throughout the term of the project. Failure to do so may be considered a material breach of contract.

6. After a ten (10) business day notice, the Owner reserves the right to request a new Project Manager, when it appears that, in the Owner's sole discretion, the Project Manager is not fulfilling the full responsibilities of the position. Failure by Contractor to provide adequate Project Manager meeting requirements of the Owner, may result in Contract termination.

3.10 CHANGES IN THE WORK

A. No changes in work with the effect of either increasing or decreasing in the project value shall be made without specific and prior authorization by the Owner and Designer.

B. Owner, without invalidating the contract and without notice to any surety, may at any time order extra work or make changes by altering, adding to or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be authorized by a written Change Order approved by Owner and Contract Designer. Upon receipt of such an order Contractor shall promptly proceed with the work involved. All such work shall be executed under the conditions of the original Contract. Owner authorized change order(s) may be issued at any time prior to Contract close out.

C. When so directed, Contractor shall promptly submit an itemized estimate and a unit price for performing or deleting such extra or changed work as may be contemplated. Any extensions or reductions of the contract time associated with extra or changed work shall be identified at the time Contractor submits such documentation.

D. At the Owner's discretion, adjustments in the Contract Sum shall be determined by one or more of the following methods:

1. By mutual acceptance of a lump sum cost, including overhead and profit, itemized and supported by sufficient substantiating data to permit evaluation.

2. By unit prices stated in the Contract Documents including, but not limited to, Schedule of Values.

3. By unit prices mutually agreed upon.

3.11 PAYMENT REQUESTS AND PAYMENTS

A. Contractor's invoices shall be submitted monthly in correlation with the Project Schedule indicating percentage of work completed.

B. All contract and change order invoices shall be sent directly to Contract Designer.

C. A 10% retainage shall be held back on all payment requests, including, but not limited to hardware, software, change orders and services, until final completion and close out of the project or project phase as determined by Owner and Designer.

D. Contractors are required to submit all invoices on approved AIA Payment Request Forms or other billing format pre-approved by Contract Designer. Each AIA Payment Request Form shall be accompanied by a properly completed, executed and notarized Waiver of Lien which shall be in a format and contain verbiage approved by Owner.

E. The Contract Designer and Owner shall process payment requests on a monthly schedule and in accordance with their respective established processes and procedures. Payments will be made by the Owner based only on AIA Request Forms having been previously certified, audited and approved by Contract Designer and accompanied by acceptable Waiver of Lien.

END OF SECTION

SECTION 00 65 00
CONTRACT CLOSE OUT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide an orderly and efficient transfer of the completed work to Owner.

B. Details affecting work of this Section includes, but is not limited, to all other Sections herein and all related Contract Documents.

C. Activities relative to Contract close-out are described in, but not limited to, this and other Sections of this document.

1.02 SUBSTANTIAL COMPLETION

A. “Substantial Completion” shall be defined as:

1. All responsibilities of Contractor for all provisions and requirements of all divisions and sections of complete Contract herein, and as amended, are properly and fully completed or properly, accurately and acceptably provisioned for.

2. All systems, equipment, facilities, services, programming and/or components required by all divisions and sections of complete Contract are fully operational, acceptable and useful to the Owner for their intended purposes.

B. Prior to requesting inspection by Designer to certify Substantial Completion, Contractor shall use adequate means to assure the Work is completed in accordance with the specified requirements and is ready for such inspection.

PART 2 - MATERIALS

2.01 NOT USED FOR THIS SECTION

PART 3 - EXECUTION

3.01 PROCEDURES

A. Contractor shall submit a written request to Designer indicating they have achieved Substantial Completion of Work.

B. Within a reasonable time after receipt of the request, Designer will inspect Work to determine status of completion.

C. Should Designer determine the Work is not substantially complete:

1. Designer promptly will so notify Contractor, in writing giving reasons therefore and providing sufficient details to allow Contractor to make corrective actions.

2. Contractor shall then expeditiously remedy the deficiencies and notify Designer in writing when ready for re-inspection.

3. Designer will re-inspect the Work.

4. Excessive re-inspections of Work may result in fees being assessed Contractor.

D. Should Designer concur the Work is substantially complete:

1. Designer will prepare a letter of Substantial Completion.

2. Designer will submit the letter to Owner and Contractor.

3. Contract shall be deemed “Closed Out” for retainage purposes.

4. Final Acceptance of the system shall be deemed complete.

END OF SECTION

SECTION 27 41 16
MULTIMEDIA SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF PROJECT

A. Work described in this specification section pertains to new classroom multimedia infrastructure and instructional equipment for Delton Kellogg Schools.

B. Contractors shall propose Systems and/or components to be deployed using standard procedures and technology components and as specified herein. The system components shall be installed and connected to the owner's existing physical infrastructure and as specified herein.

C. Contractor shall advise, coordinate and work cooperatively with Owner representatives or owner's designee related to any configuration changes required and/or proposed for Owner's existing physical infrastructure.

D. Contractor shall work collaboratively with Owner and Designer. Work shall include but not be limited to installation of supplied equipment, removal of existing equipment and full operational capacity of system as specified herein.

E. The Contractor shall design, engineer, configure, supply, connect, test, document, train Owner representatives and warrant a fully operational and compliant system and/or component connection to the system complete and with full functionality as specified herein.

F. Contractor shall provide all transportation and delivery services in a timely manner to individual work location(s) at each site of work in preparation for installation activity.

G. Contractor shall coordinate their installation with other contractors, Designer and the Owner as is appropriate.

1.02 WARRANTY

A. Complete installation shall be free from defect and/or failure for a period of warranty. Any replacement, upgrade or fix, including labor for any non-conforming or non-operational part of the system shall be fixed and/or replaced at no cost to the Owner.

B. Manufacturer's warranty shall be provided for all components of the system.

1. Any documents and/or submittals required by individual manufacturers for compliance with the standard and/or applicable extended warranty programs shall be provided and submitted for approval by the Contractor.

2. Contractor shall submit all documents, apply for warranty or extended warranty certification, and provide a Certificate of Warranty or Extended Warranty as may be applicable from the manufacturer prior to project closeout.

3. Standard manufacturer warranty duration and terms shall be identified for each component with bid as well as additional fee required for warranty duration election of each of the following terms:

   a. Three (3) year parts and labor warranty.

C. On site services provided under the warranty shall be performed by personnel or representatives of manufacturer of individual components and/or appropriately trained and certified Contractor representatives as herein defined and located within physical proximity to provide response levels deemed acceptable to Owner.

D. Contractor shall provide the following response times for all malfunctioning equipment:

1. Twenty-four (24) hours or less for matters that render twenty percent (20%) or more of the system unable to maintain normal functionality.

2. Two (2) business days for matters not meeting the above criteria.

3. Response time shall be measured from the time Contractor is notified by Owner to the time work is begun to resolve the matter.

E. System Warranty shall commence on date of substantial completion as certified by Designer and provided for herein. Delivery to work site of materials, physical removal from packaging, issuance of Contractor documents including, but not limited to invoices and/or packing slips, or any event or documentation, not specifically provided for herein, shall have no effect on Warranty or System Acceptance by Owner and/or Designer.

1.03 SUBMITTALS

A. Submittals shall consist of, but not be limited to, technical cut sheets and detailed information pamphlets on all components of the system to be installed. All cut sheets and submittals shall be distinctly marked to highlight the actual part number of the item being submitted for approval with Bid Proposals.

B. Shop drawings, data sheets and diagrams shall be submitted by Bidder for approval by Designer with Bid Proposals.

1. Shop drawings, data sheets and diagrams shall show all data relating to structural, electrical, wiring, cross connect, interconnect, equipment

arrangement/layout, and any other information deemed significant by the Designer.

2. No work constituting final installation shall be commenced until after approval of shop drawings, data sheets and diagrams by Designer.

C. Contractor shall provide proof of manufacturer support by photocopy of certification and letter of support from major component manufacturers for this specific project with Bid Proposals.

D. Equipment or material installed for this project that do not have an approved submittal associated with it, will be removed and replaced with acceptable equipment or material as defined by the Designer. All replacement costs including, but not limited to material and labor, shall be the sole responsibility of the Contractor.

1. The Owner and/or Designer may notify Contractor of any offending situations under this provision allowing Contractor up to forty-eight (48) hours to correct the situation prior to taking other corrective action.

2. The Owner reserves the right to replace unapproved materials and deduct the costs of doing so as defined herein from any amounts that may be due, or become due Contractor.

E. The Contractor shall submit within ten (10) calendar days after the Notice to Proceed, a schedule that reflects the sequence of activities of the contractor's approach to the execution of and completion of the work. The schedule shall be broken into work areas to provide for a clear identification of the planned progress of the work. Included in the schedule will be a list of tasks with list of deliverables and the percentage of work completed. This schedule shall coincide with progress payments applications dates and projected amounts. All durations shown will be in working days. Applications that generate Microsoft Project compatible files shall be management tools of choice. The timeframe described in the Contractor's Schedule shall represent the Contractor's plan for organizing, directing, managing, controlling, staffing and executing the work required by the Contract Documents. The district will rely on such schedules to coordinate and otherwise plan the work of the District, other separate contractors, or the District's routine daily work.

1.04 REFERENCE SPECIFICATIONS

A. All work, products, and materials shall conform with the following standards as applicable for the intended use:

1. EIA/TIA Commercial and Administration Standards

2. NEC

3. IEEE 802

4. IETF RFCs

5. FCC – All Applicable Rules and Regulations

6. UL

7. MIOSHA Safety Standards

1.05 CONTRACTOR

A. The Contractor shall accept complete responsibility for the installation, certification and support of the system and/or components as required herein. Contractor shall be an authorized vendor of all major components.

B. All work shall be performed and supervised by Project Managers, Engineers and/or Technicians who are qualified to install specified equipment and perform related tests as recommended by the manufacturer and in accordance with the manufacturer's best practices and methods and as required herein.

C. Project Managers, Engineers and Technicians employed on this project shall be properly and fully trained and qualified by the manufacturer on the installation and testing of the equipment and systems to be installed.

D. The Contractor shall have a proven track record in comparable system supply, configuration and installation. This must be shown by the inclusion of references of at least three (3) projects involving the supply and/or installation of similar systems completed by the Contractor in the prior two (2) years with the sealed Bid Proposal as provided herein.

PART 2 - PRODUCTS

2.01 Acceptable Manufacturers

A. Acceptable manufacturers have been provided to comply with a standard for individual components associated with the specified system. Indicated components include particular models and makes currently installed and/or preferred by Owner.

B. Any system bid shall be based only on acceptable manufacturer's components.

2.02 Supply most current version of all products provided.

A. Manufacturer shall have five (5) years of experience and history manufacturing similar products to those specified.

B. Proposed components shall have been field tested and proven in actual use.

C. Prior and/or old versions of products, unless specifically approved and documented by Designer and/or Owner shall not be acceptable.

D. In cases where a newer version of hardware or software is available at the time of installation, Contractor shall request clarification from Designer on which version is to be used.

2.03 Furnish only new, first-class quality materials and equipment.

2.04 MULTI-MEDIA INFRASTRUCTURE CABLE

A. All classrooms receiving new projection systems shall receive new multi-media infrastructure cable. Please refer to Appendix B for quantities and locations.

B. All cable shall be factory manufactured with terminations and connector assemblies fully attached and integral to the cable to industry published quality standards and meet performance requirements specified herein.

C. Infrastructure cable to connect projector to a teacher station wall plate shall be provided.

D. Acceptable Cable:

1. Active HDMI Digital Video Cable 1 shall be of commercial first-class quality manufacture and meet or exceed the following requirements:

   a. Active Optical Cable

   b. Supports 4K@60Hz

   c. CMP Plenum Rated

   d. Rated for in wall use

2. Active HDMI Digital Video Cable 2 shall be of commercial first-class quality manufacture and meet or exceed the following requirements:

   a. Active Optical Cable

   b. Supports 4K@60Hz

   c. CMP Plenum Rated

   d. Rated for in wall use

E. Wall plate provided shall be constructed of commercial grade stainless steel.

1. Wall plate shall contain connection points for all specified cables

2. Two (2) data outlet locations.

3. Unpopulated data connections shall all have blank covers installed.

4. Any existing terminated category cabling should be securely locked into new plate and any existing labeling shall be transferred.

5. HDMI inputs in faceplate shall be positioned at the bottom of the plate, side by side in double gang plate so both connections will be able to utilize right angle connectors for umbilical cables. Contractor to supply necessary HDMI passthrough pig tails to support tight bend radius mounting.

6. In locations where HDMI inputs shall terminate on raceway provided by Others, Contractor shall supply appropriate dual HDMI single gang faceplate with pig tails to support tight bend radius mounting. Contractor to supply necessary frame and connectors for a fully functional system.

F. All cables originating from wall plate connectors, except speaker cables, shall terminate in a service loop eight (8) feet in length at projector location.

G. Cable shall terminate in the following connector gender:

a. Active HDMI Digital Video Cable 1 - HDMI Type A 19 pin plug connector to display device.

b. Active HDMI Digital Video Cable 2 - HDMI Type A 19 pin plug connector to display device.

2.05 MULTIMEDIA CONNECTION CABLE

A. All classrooms receiving new projection systems shall receive new multi-media connection cable bundles. Please refer to Audio-Visual Equipment Schedule for quantities and locations.

B. Fully assembled infrastructure cable bundles for each classroom indicated to receive a projector shall be provided for final connection to components and classroom plate by others.

C. Acceptable Manufacturer

1. Cable shall be of commercial first-class quality manufacture.

2. All Cable shall be fifteen (15) feet in length and terminate in the following connector genders:

3. HDMI Cable 1 (M/M) - Cable shall have right angle connector in wall plate locations and straight connector on teacher device input location.

4. HDMI Cable 2 (M/M) – Cable shall have right angle connector in wall plate locations and straight connector on teacher device input location.

D. Contractor shall fully disassemble existing multimedia cable bundle and leave category cables for computer and phone connection. Existing HDMI cables shall be provided to Owner for disposition.

2.06 STANDARD VIDEO PROJECTORS

A. Standard video projectors, each with accompanying projector universal mount shall be provided. Please refer to Appendix B for quantities and locations.

B. Acceptable Manufacturers (In alphabetical order):

1. EPSON

a. W49

C. Projectors shall include full functionality of the following feature sets and/or standards in projector management software and/or remote access capability and in conjunction with proposed projectors, and shall provide for all management, configuration and control features and/or standards from a management administrative interface:

1. Administration access shall be protected by unique and secure log on (User ID and Password).

2. System administrator shall be capable of complete system back-up and full system restoration from a previously saved configuration.

3. Projector reporting shall include, but not be limited to:

a. Bulb/Lamp life status management (bulb use).

b. Device power status (on/off).

c. Filter status management.

d. Source selection status.

4. Projector Control shall include, but not be limited to:

a. Device power (on/off).

b. Source selection.

c. Internal or downloadable program schedule database for timed execution of projector control functions based on, but not limited to time of day and day of week.

D. Projector management software and/or access shall be installed on equipment provided at Owner discretion to be located at the owner's discretion and communicate over the existing installed infrastructure provided by others.

E. Projectors shall meet or exceed the following minimum output, port availability and other standards:

1. 3800 ANSI Lumens
2. WXGA resolution
3. +/- 30-degree keystone correction.
4. Two (2) HDMI Inputs
5. 7 second power-on to image.
6. 1.2x optical zoom lens.
7. Bidirectional RS-232 serial control port.
8. RGB WXGA port.
9. Operating volume level of less than 37dB (fan).
10. Operating temperature range of 45 – 95 degrees Fahrenheit.
11. Accessible top or front panel mechanical controls including, but not limited for the following functions:
    a. Power on.
    b. Power off.
    c. Video input port selection.
12. Mechanical keypad lock out to minimize tampering with device settings
13. Ethernet connector for management, monitoring and control applications.
14. User definable power on graphic to replace factory default or manufacturer logo
15. Easily serviceable bulb and filter maintenance when mounted in ceiling kit
16. Compatibility with standard ceiling mounting kits.

F. In the event of a power failure, system shall automatically re-initialize and "become active" to the last configuration in use with no human intervention.

G. All other features currently a part of the manufacturer's latest commercial release.

2.07 PROJECTOR CEILING PLATES/BRACKETS/KITS

A. Projector ceiling plates, brackets and kits shall be provided in each classroom for all projector installations as indicated.

B. Acceptable Manufacturer(s):

1. CHIEF

2. PEERLESS

a. Where projectors are to be mounted in drop ceilings, Peerless model CMJ500 with appropriate length downtube shall be provided.

C. All projector mounts shall be firmly and securely mounted to finished ceiling, or other surfaces as required and/or specified herein to maximize coverage and minimize tampering potential.

D. Mounts shall be located in coordination with display boards and/or screens and projectors to provide a minimum of 96% coverage of the horizontal viewing area of installed display boards and/or screens with no optical distortion.

E. Projector mounts shall be complete and safely accommodate particular and specific mounting conditions for standard projectors.

F. All work shall conform to manufacturers best practices recommendations.

G. Where standard mounting in drop ceilings is not possible or acceptable to Owner, Contractor shall provide alternative and compliant mounting hardware and installation consistent with other specified materials.

2.10 VOICE AMPLIFICATION

A. Voice Amplification Systems shall be provided and installed in locations as indicated in Appendix B.

B. Acceptable Manufacturers

1. LIGHTSPEED

a. 955 ACCESS

C. Major components of Voice Amplification System shall be installed in/on cabinet provided by others.

D. Voice Amplification systems shall meet or exceed the following minimum standards:

1. DECT (1.9 GHz) communication for complete classroom coverage of two (2) microphones simultaneously.

2. Two (2) highly durable, rechargeable, battery powered, tamper resistant, impact resistant, lanyard based pendant microphones.

a. Two (2) Lightspeed volume control Flexmikes

E. Contractor shall provide one (1) cable for connectivity from audio output of projector to amplifier to support a fully functional and compliant system.

F. In the event of a power failure, system shall automatically re-initialize and "become active" to the last configuration in use with no human intervention.

G. All other features currently a part of the manufacturer's latest commercial release.

H. Voice Amplification Systems where indicated shall be neatly and securely mounted at existing projector locations. As indicated in the provided line diagram, Contractor shall supply and install audio cabling from exiting projector output to connect to provided Voice Amplification Systems.

2.11 DOCUMENT CAMERAS

A. Document Cameras shall be provided and installed in locations as indicated in Appendix B.

B. Acceptable Manufacturers

1. iPevo

a. VZ-R

2. Or Equal.

C. Document cameras shall include full functionality of the following feature sets and/or standards in workstation software and in conjunction with proposed devices, and shall provide for all management, configuration and control features and/or standards from a workstation administrative interface:

1. Software Control shall include, but not be limited to:

a. Zoom.

b. Focus.

c. Brightness.

d. White Balance.

e. Video capture.

D. Document camera software shall be installed by Owner on standard classroom workstations provided by Owner.

E. Document camera shall be compatible for use with Chromebook devices.

F. Document cameras shall meet or exceed the following minimum standards:

1. Powered 12x Optical Zoom.

2. 8x Digital Zoom.

3. Maximum tabletop camera capture field of 11” x 17”.

4. HDMI Input

5. USB 2.0 port connection to computer workstation to provide, but not be limited to the following:

a. Image “snapshot” capture.

b. Video capture.

c. Device control.

6. 25 frames per second video capture rate.

7. SD card slot.

8. HDMI output.

9. LED illumination lamp.

10. WXGA output port with 1440 x 900 resolution at 60Hz.

11. Auto focus adjustment with manual override.

12. Auto white balance.

13. Auto brightness adjustment with manual override.

G. In the event of a power failure, system shall automatically re-initialize and “become active” to the last configuration in use with no human intervention.

H. All other features currently a part of the manufacturer's latest commercial release.

2.12 PROJECTION SCREENS – 8'

A. Projection Screens shall be provided and installed in locations as indicated in Appendix B.

B. Acceptable Manufacturers (in alphabetical order):

1. DALITE

2. DRAPER

C. Projection Screens shall meet or exceed the following minimum standards:

1. Viewing surface of 96" in width.

2. Controlled screen return (CSR).

3. Matte white viewing surface with black masking borders.

4. Constructed of flame retardant and mildew resistant fabric.

5. Neutral color painted 21-gauge steel case.

6. 4' pull cord securely fastened to bottom of screen.

7. Screens shall be wall mounted at locations indicated by Owner with approved permanent wall L-brackets capable of supporting screen and reasonably expected forces in classroom environment.

8. In locations where wall mounted is not acceptable, coordinate ceiling mounted screens with Owner and Designer.

2.13 SPECIAL CONFIGURATION LOCATIONS

A. Configuration A

1. Contractor shall supply one (1) of the specified configurations in the following locations.

a. Delton Kellogg Elementary School – ELA - D201

2. All audio video head end equipment to be installed in IT rack in D211A.

3. Three (3) LED Monitor(s)

a. Acceptable Manufacturer(s)

1. SAMSUNG

    A. QB65R

2. LG

b. LED Monitor shall meet or exceed the following minimum requirements:

1. 65” diagonal

2. Brightness 350 cd/m

3. Rated for 16/7 run-time

4. 8ms refresh rate

5. 3840 x 2160 resolution (4K UHD)

6. 16:9 aspect ratio

7. Two (2) HDMI input ports

8. RS232C In/out

c. Contractor shall supply and install appropriate mounts for supplied LED monitors, one (1) flat mount Peerless SF660P or Chief equivalent shall be provided. See drawings for location.

d. All monitors shall be controlled through supplied control system. If expansion of controller IO is necessary Contractor shall provide necessary IO expansion units.

e. Contractor shall supply appropriate NVX equipment for discrete output for each monitor concurrently for a fully functional system.

4. One (1) LED Monitor(s)

a. Acceptable Manufacturer(s)

1. SAMSUNG

    A. QB85R

2. LG

b. LED Monitor shall meet or exceed the following minimum requirements:

1. 85” diagonal
2. Brightness 350 cd/m
3. Rated for 16/7 run-time
4. 8ms refresh rate
5. 3840 x 2160 resolution (4K UHD)
6. 16:9 aspect ratio
7. Two (2) HDMI input ports
8. RS232C In/out

c. Contractor shall supply and install appropriate mounts for supplied LED monitors, one (1) flat mount Peerless SF660P or Chief equivalent shall be provided. See drawings for location.

d. All monitors shall be controlled through supplied control system. If expansion of controller IO is necessary Contractor shall provide necessary IO expansion units.

e. Contractor shall supply appropriate NVX equipment for discrete output for each monitor concurrently for a fully functional system.

5. One (1) Multimedia Processor

a. Acceptable Manufacturer(s)

1. Crestron

A. CP4

2. KRAMER
3. QSC

b. Contractor shall supply all parts, cables and accessories to securely mount unit in existing Owner rack.

c. Contractor shall provide all control, communication, audio and video patch cables to connect input and output ports to all Contractor provided materials.

d. Contractor shall program Multimedia processor to integrate with Contractor provided LED Monitors. Contractor shall supply all

necessary cabling and programming to fully enable integration with control system.

e. Contractor shall provide all system programming and operation software for a fully functional and operational system. All programming and/or configuration activity shall be completely coordinated and approved by Owner and/or Designer prior to initiation of final installation activity.

f. Contractor shall integrate Contractor supplied wireless presentation system with control system

g. Contractor shall provide and install fully compliant shielded cabling and any other low voltage communication infrastructure needed to fully connect to the projection system from four (4) input plates and one (1) wireless presentation system. Cable shall meet or exceed Crestron requirements for NVX systems.

h. Contractor shall completely integrate control system and multimedia systems with provided audio system.

6. Four (4) Crestron NVX 4K60 4:4:4 AV over IP devices total shall be provided to support discreet control and output to each LED monitor device.

   a. Acceptable Manufacturer(s)

      1. CRESTRON

         A. DM-NVX-D30

      2. KRAMER

      3. QSC

7. Five (5) Crestron NVX 4K60 4:4:4 AV over IP devices total shall be provided to support connection and routing of each input device.

   a. Acceptable Manufacturer(s)

      1. CRESTRON

         A. DM-NVX-E30

      2. KRAMER

      3. QSC

8. Four (4) Multimedia Input Locations shall be provided.

a. Acceptable Manufacturer(s)

1. CRESTRON

A. DM-TX-4KZ-100-C-1G-B-T

2. KRAMER

3. QSC

b. Black color

c. Contractor shall supply correct in-plate DM transmit and receive equipment to extend input location to supplied 4K60 4:4:4 NVX encoder.

9. One (1) Touch Screen(s) shall be provided

a. Acceptable Manufacturer(s)

1. Crestron

A. TSW-770-B-S

2. KRAMER

3. QSC

b. Touch Screen(s) shall be provided to control system operations.

1. Connect touch screens to supplied NVX control system as per manufacturer installation instructions.

2. Provide all necessary cabling, mounts and accessories to securely mount touch screen in double gang box provided by Others as part of construction project.

3. Control touch screen shall be provided in locations specified herein that shall provide the following functions but not limited to.

A. System Power On

B. System Power Off

C. Select Source, input 1, input 2, input 3, input 4 or wireless presentation system

D. Select Destination, individual monitor or combination

E. Discrete audio level control of all audio inputs including wireless microphone system

F. Image Freeze

G. Audio Mute

4. Black in color

c. Contractor shall provide all control, communication, audio and video patch cables, transmitters and receivers to connect input and output ports to all Contractor and Owner provided materials in the space.

d. Contractor shall program Multimedia Control System to integrate with provided LED Monitors.

10. One (1) Wireless Presentation System

a. Acceptable Manufacturers (in alphabetical order):

1. KRAMER

A. VIA GO 2

B. Or Equal.

b. Wireless Presentation System shall meet or exceed the following requirements:

1. HDMI output with support for up to 4K@30Hz.

2. Gigabit LAN and dual-band 802.11ac Wireless connectivity

3. 4GB Memory

4. 32GB Storage

5. All other features currently a part of the manufacturer's latest commercial release.

6. All necessary cables, mounting brackets and connectors to securely mount Wireless presentation system in Contractor provided rack.

c. Contractor shall integrate wireless presentation system with provided Crestron control system.

d. Contractor shall coordinate installation and configuration of Wireless Presentation System per manufacturer recommended guidelines.

Contractor shall work collaboratively as necessary with Owner and network support resources for a complete and compliant installation.

e. Contractor shall supply and install all necessary patch cables to connect equipment to network and in data closet location. Contractor shall cross connect equipment in data closet and report to Owner data closet, switch and port location for programming.

11. One (1) Voice Amplification System(s) shall be provided.

    a. Acceptable Manufacturer(s)

        1. SHURE

            A. QLXD4

        2. Or Equal.

    b. Handheld (SM58 or equal) and Lavalier microphone combo

    c. Contractor shall include charging base for simultaneous charging of one (1) handheld microphone and one (1) bodypack transmitter.

    d. Contractor shall supply and install any necessary external antennas and cabling to enable clear and reliable audio signal coverage for entire ELA.

    e. Contractor shall supply all mounting hardware to securely mount equipment into Owner supplied rack.

12. Eight (8) Recessed Speakers shall be provided and installed

    a. Acceptable Manufacturer(s)

        1. CRESTRON

            A. SAROS IC8T-W-T-EACH

        2. Or Equal

    b. Passive 2-way full range speaker

    c. 8” Low Frequency Driver, .98-inch Voice Coil

    d. 8 ohms

    e. 90.5 dB sensitivity

    f. 50Hz-20kHz +/- 3dB

g. Speakers shall be placed in locations throughout ELA for even distribution of sound, final speaker locations to be reviewed by Owner and/or Designer.

h. Contractor shall safely and securely mount speakers in gypsum ceiling structure using manufacturer recommended and industry best practices.

i. Contractor shall include any necessary backbox and speaker protection for a fully functional and compliant system where applicable.

j. Contractor shall supply and install properly sized speaker cabling to support supplied speakers. Each speaker shall be independently wired back to Owner provided rack.

k. Speakers shall be white in color.

13. One (1) DSP shall be provided and installed.

    a. Acceptable Manufacturer(s)

        1. Biamp/Community

        2. Crestron

        3. Symetrix

        4. QSC

        5. Or Equal

    b. System shall be populated with necessary accessories for two (2) line-level output audio channels.

    c. System shall be populated with necessary accessories for eight (8) line-mic or line-level input audio channels.

    d. Contractor shall supply all parts, cables and accessories to securely mount unit in provided cabinet.

    e. Contractor shall supply all necessary labor to configure Mixer/DSP for even audio reproduction throughout the learning commons.

    f. DSP shall allow discreet control of each audio input from provided Crestron control panel.

    g. Contractor shall provide all system programming and operation software for a fully functional and operational system. All programming and/or configuration activity shall be completely

coordinated and approved by Owner and/or Designer prior to initiation of final installation activity.

h. Contractor shall supply all cables and accessories for a fully functional system.

14. One (1) Amplification System shall be provided and installed

a. Acceptable Manufacturer(s)

1. CRESTRON

2. JBL PRO

A. CSA2300Z

3. Or Equal

b. Two (2) input channels

c. Two (2) output channels

d. 300W maximum output per channel

e. S/N (20 Hz – 20kHz @ 8 Ohms) > 97 dB

B. Configuration B

1. Contractor shall supply one (1) of the specified configurations in the following locations.

a. Delton Kellogg Elementary School – STEM D127

2. Multimedia Infrastructure shall be provided and installed as specified.

a. All cable shall be factory manufactured with terminations and connector assemblies fully attached and integral to the cable to industry published quality standards and meet performance requirements specified herein.

b. Infrastructure cable to connect projector to a teacher station wall plate shall be provided.

c. Acceptable Cable:

1. HD Base-T Digital Video Cable 1 shall be of commercial first-class quality manufacture and meet or exceed the following requirements:

A. Cable shall meet or exceed Shielded Category 6 certification.

B. Cable shall be constructed of solid 23 AWG conductors.

C. If pre-terminated shielded cable is used, a shielded passthrough connection at the wall plate is required.

2. HD Base-T Digital Video Cable 2 shall be of commercial first-class quality manufacture and meet or exceed the following requirements:

A. Cable shall meet or exceed Shielded Category 6 certification.

B. Cable shall be constructed of solid 23 AWG conductors.

C. If pre-terminated shielded cable is used, a shielded passthrough connection at the wall plate is required.

d. Wall plate provided shall be constructed of commercial grade stainless steel.

e. Wall plate shall contain connection points for all specified cables

1. Additional Two (2) data outlet locations for data cabling.

2. Unpopulated data connections shall all have blank covers installed.

3. Existing or new terminated category cabling should be securely locked into new plate.

A. Data cabling labeling will be carefully transcribed on new faceplate with mechanically printed label.

4. All wall plate connectors shall provide female metal screw terminals for securing connecting cables where connectors do not have inherent locking mechanisms. Plate shall contain the following connectors:

A. HD-Base-T Digital Video 1 (Category 6 STP)

B. HD-Base-T Digital Video 2 (Category 6 STP)

C. Audio Speaker (L/R) with Speakon Male for connection to speakers shall be co-located on this same wall plate.

5. All cables originating from wall plate connectors, except speaker cables, shall terminate in a service loop eight (8) feet in length at projector location.

6. Cable shall terminate in the following connector gender:

    A. HD-Base-T Digital Video (Category 6 STP)

    B. HD-Base-T Digital Video 2 (Category 6 STP)

    C. Terminate into an active HD-Base-T receiver and include an HDMI Type A 19 pin plug connector to display device.

    D. Terminate in a 568-compliant type female jack located on the face plate.

    E. NOTE: Audio Speaker (L/R) cable shall terminate on specified speakers and as indicated herein.

f. HD-Base-T Digital Video Cable shall be constructed using 23 AWG solid conductors and of a high-quality construction method for minimal loss characteristics, to maintain quality high-resolution video image and include support for 1080p video resolution for the installed distance plus a fifteen (15) foot extension for device attachment.

3. Multimedia Infrastructure Cable Bundle shall be supplied as specified.

a. Fully assembled infrastructure cable bundles for each classroom indicated to receive a projector shall be provided for final connection to components and classroom plate by others.

b. Acceptable Manufacturer

    1. Cable shall be of commercial first-class quality manufacture.

c. All Cable shall be fifteen (15) feet in length and terminate in the following connector genders:

    1. HD-Base-T Shielded Category 6 patch cable 1 (M/M).

    2. HD-Base-T Shielded Category 6 patch cable 2 (M/M).

    3. Audio Speaker (L/R) with Speakon Female

        A. to bare cable for connection to screw terminals on amplifier.

    4. Classroom Phone Black Category 6 Patch Cable (M/M).

    5. Wireless Presentation System Black Category 6 Patch Cable (M/M).

d. A single F6 Woven Split Braid Sleeving to contain and protect all associated cable secure with Velcro strips.

1. Velcro strips shall be trimmed and flush with sleeving material.

2. Velcro strips shall be loose enough for cable movement.

3. Coordinate all color selections with Owner and Designer.

4. Braided sleeving should be cut and sealed cleanly using a hot knife or similar tool.

5. Coordinate power cable relationship into connection bundle with Owner and Designer.

6. Contractor shall supply power cord extension and surge suppressed power strip to be installed at the teacher input location. Power Strip shall contain six (6) grounded AC power connectors.

   A. Tripp-Lite TLP615 or equal

   B. Power cord should be sufficient length to support device attachment with 15' cable bundle and be neatly placed at teacher input location.

4. Two (2) Projector(s) shall be provided and installed.

   a. Acceptable Manufacturer(s)

      1. Epson

         A. W49

   b. 3800 ANSI Lumens

   c. WXGA resolution

   d. Projector shall be installed and positioned for the projected image to maximize image on existing manual rollup screens.

   e. Projector shall be securely installed and affixed to mounting system and downpipe that is structurally attached to finished ceiling. Contractor shall supply appropriate mount and downpipe to extend projector securely and safely to optimal location for projection onto existing screen.

   f. Provided white projector downpipe shall allow routing of projector cabling internally.

   g. Contractor shall supply and install all necessary patch cables to connect equipment to network and in data closet location. Contractor

shall cross connect equipment in data closet and report to Owner data closet, switch and port location for programming.

5. One (1) Voice Enhancement System shall be provided and installed (including four (4) ceiling speakers).

    a. Acceptable Manufacturer:

        1. LIGHTSPEED

            A. 975

    b. Major components of Voice Amplification System shall be installed in/on teacher desk provided by others.

    c. Voice Amplification systems shall meet or exceed the following minimum standards:

        1. DECT (1.9 GHz) communication for complete classroom coverage of two (2) microphones simultaneously.

        2. 20 Watts per channel.

        3. Two (2) highly durable, rechargeable, battery powered, tamper resistant, impact resistant, lanyard based pendant microphones.

        4. Two (2) Lightspeed volume control Flexmikes

    d. Contractor shall provide one (1) shielded cable for connectivity from audio output of video switcher to amplifier to support a fully functional and compliant system.

    e. In the event of a power failure, system shall automatically re-initialize and “become active” to the last configuration in use with no human intervention.

    f. All other features currently a part of the manufacturer’s latest commercial release.

6. One (1) document camera shall be provided and installed.

7. Acceptable Manufacturers

    a. iPevo

        1. VZ-R

    b. Or Equal.

c. Document cameras shall include full functionality of the following feature sets and/or standards in workstation software and in conjunction with proposed devices, and shall provide for all management, configuration and control features and/or standards from a workstation administrative interface:

    1. Software Control shall include, but not be limited to:

        A. Zoom.

        B. Focus.

        C. Brightness.

        D. White Balance.

        E. Video capture.

d. Document camera software shall be installed by Owner on standard classroom workstations provided by Owner.

e. Document camera shall be compatible for use with Chromebook devices.

f. Document cameras shall meet or exceed the following minimum standards:

    1. Powered 12x Optical Zoom.

    2. 8x Digital Zoom.

    3. Maximum tabletop camera capture field of 11” x 17”.

    4. HDMI Input

    5. USB 2.0 port connection to computer workstation to provide, but not be limited to the following:

        A. Image “snapshot” capture.

        B. Video capture.

        C. Device control.

    6. 25 frames per second video capture rate.

    7. SD card slot.

    8. HDMI output.

9. LED illumination lamp.

10. WXGA output port with 1440 x 900 resolution at 60Hz.

11. Auto focus adjustment with manual override.

12. Auto white balance.

13. Auto brightness adjustment with manual override.

14. Availability of microscope attachment accessory or feature.

g. In the event of a power failure, system shall automatically re-initialize and "become active" to the last configuration in use with no human intervention.

h. All other features currently a part of the manufacturer's latest commercial release.

8. Two (2) projections screens shall be provided and installed.

    1. Acceptable Manufacturers (in alphabetical order):

        A. DALITE

        B. DRAPER

    2. Projection Screens shall meet or exceed the following minimum standards:

        A. Viewing surface of 96" in width.

        B. Controlled screen return (CSR).

        C. Matte white viewing surface with black masking borders.

        D. Constructed of flame retardant and mildew resistant fabric.

        E. Neutral color painted 21-gauge steel case.

        F. 4' pull cord securely fastened to bottom of screen.

        G. Screens shall be wall mounted at locations indicated by Owner with approved permanent wall L-brackets capable of supporting screen and reasonably expected forces in classroom environment.

        H. In locations where wall mounted is not acceptable, coordinate ceiling mounted screens with Owner and Designer.

9. One (1) Wireless Presentation System shall be provided and installed.
    a. Acceptable Manufacturers (in alphabetical order):
        1. KRAMER
            A. VIA GO2
        2. HDMI output with support for up to 4K30Hz video streaming
        3. Gigabit LAN and dual-band 802.11ac Wireless connectivity
        4. 4GB Memory
        5. 32GB Storage
        6. 3.5mm Audio Output
        7. All other features currently a part of the manufacturer's latest commercial release.
    b. Cables and Accessories
        1. 3' HDMI cable for connectivity to switcher
        2. All necessary mounting brackets and connectors to securely mount at teacher input location.
        3. Work includes extending Ethernet Category 6 compliant patch cables from installed equipment, as required, to Owner identified connection ports at all locations.
            A. Patch cables shall not exceed fifteen (15) feet in length.
        4. Material and labor to cross connect wireless presentation systems in communication closets to PoE switches shall be provided by Contractor using provided Category 6 patch cables.
            A. Cable lengths shall be appropriate for connections made, and not include excessive cable.
            B. Coordinate all work with Owner, Designer and other contractors prior to installation.
        5. Contractor shall coordinate installation and configuration of Wireless Presentation System per manufacturer recommended guidelines. Contractor shall work collaboratively as necessary with Owner and network support resources for a complete and compliant installation.

10. One (1) Matrix Switcher shall be provided an installed.

    a. Acceptable Manufacturers (in alphabetical order):

        1. ATLONA

            A. AT-OME-MS42

        2. Or Equal.

    b. Classroom 3x2 matrix video switch shall meet to exceed all of the following requirements:

        1. One (1) USB C Input

        2. Two (2) HDMI inputs

            A. One (1) Eight (8) foot HDMI cable for teacher PC connection.

            B. One (1) Eight (8) foot HDMI cable for connection to wireless presentation system.

        3. 4K/UHD capability @ 60Hz – 1080p downscaling

        4. Include appropriate HDBaseT receivers to be mounted at each projector location

        5. Discreet secondary output shall include appropriate HDBaseT transmit and receive pair

        6. One HD-BaseT Output for connection at wall plate.

        7. One discreet HDMI output for connection to HDBaseT transmit and receive pair.

        8. Audio de-embedding shall be provided and located at the desktop unit. Contractor to supply and install audio cable from matrix switcher and Lightspeed amplifier.

        9. Stereo audio line level output

        10. Front panel source select with visual indication.

        11. Local power with power supply

    c. All other features currently a part of the manufacturer's latest commercial release.

C. Configuration C

1. Contractor shall supply one (1) of the specified configurations in the following locations.
    a. Delton Kellogg Elementary School – Gymnasium – D111
2. One (1) Rack Enclosure(s) shall be provided and installed as indicated on drawings.
    a. Acceptable Manufacturer(s)
        1. Middle Atlantic
        2. Or Equal.
    b. Rack enclosures shall meet or exceed the following requirements:
    c. Rack shall be constructed of heavy-gauge steel for maximum strength and durability.
    d. 18 RU
    e. Usable Depth 20” Usable Height 31.5”
    f. Static Load Capacity - 1000 lbs.
    g. UL Load Capacity – 200 lbs.
    h. Vented locking, removable front door
    i. 3U rack mount drawer for storage of microphones and accessories
    j. Locking, removable side panels keyed alike with doors.
    k. Adjustable mounting rails.
    l. Cage nut style rack rails.
    m. Grounding kit.
3. One (1) Vertical Power Distribution Unit shall be provided and installed in each location.
    a. PDU shall distribute power the entire length of the rack.
    b. Mounting brackets included for secure installation in provided rack.
4. Two (2) Voice Amplification System(s) shall be provided.
    a. Acceptable Manufacturer(s)

1. SHURE

    A. QLXD4

2. Or Equal.

b. Handheld (SM58 or equal) and Lavalier microphone combo

c. Contractor shall include charging base for simultaneous charging of one (1) handheld microphone and one (1) bodypack transmitter.

d. Contractor shall supply and install any necessary external antennas and cabling to enable clear and reliable audio signal coverage for entire gymnasium.

e. Contractor shall supply all mounting hardware to securely mount equipment into Owner supplied rack.

5. Four (4) Performance Speaker(s) in two (2) zones shall be provided.

    a. Acceptable Manufacturer(s)

        1. Biamp/Community

        2. Danley

        3. Electrovoice

        4. Harman/JBL Pro

        5. Martin Audio

        6. QSC

    b. Passive 2-way full range speaker

    c. 12” Low Frequency Driver, 2.5-inch Voice Coil

    d. 1.75” High Frequency Driver

    e. 300W AES, 1200W peak

    f. 8 ohms

    g. 96 dB sensitivity

    h. 62Hz-20kHz +/- 3dB, -10dB @ 50Hz

    i. 90°- horizontal, 60° vertical (rotatable)

j. Contractor shall safely and securely mount speakers to gymnasium ceiling structure using manufacturer recommended and industry best practices.

k. Contractor shall supply and install properly sized speaker cabling to support supplied speakers. Each speaker shall be independently wired back to Contractor provided rack.

l. Speakers shall be white in color.

m. Proposed speaker quantities are based on the provided base speaker models. If alternate equipment is proposed, Contractor shall prepare and provide EASE speaker analysis to verify even distribution of sound throughout the gymnasium for review.

6. One (1) Mixer/DSP shall be provided and installed.

   a. Acceptable Manufacturer(s)

      1. Biamp/Community

      2. Harman/JBL Pro

      3. Peavey

      4. Symetrix

      5. QSC

   b. System shall be populated with necessary accessories for 8 line-level output audio channels.

   c. System shall be populated with necessary accessories for 8 line-mic or line-level input audio channels.

   d. Contractor shall supply all parts, cables and accessories to securely mount unit in provided cabinet.

   e. System shall be capable of providing digital signal processing and equalization for two (2) discreet zones. Contractor shall supply all necessary labor to configure Mixer/DSP for even audio reproduction throughout the gymnasium.

   f. Contractor shall supply 7” touchscreen and processor to integrate with supplied DSP. Touchscreen shall have the ability to adjust the master volume of the system as well as discreet control of each mixer interface.

g. Contractor shall provide all system programming and operation software for a fully functional and operational system. All programming and/or configuration activity shall be completely coordinated and approved by Owner and/or Designer prior to initiation of final installation activity.

h. Contractor to prepare mockup of touch screen interface for review by the Owner before final programming.

i. Contractor shall supply all cables and accessories for a fully functional system.

7. One (1) Amplification System shall be provided and installed.

   a. Acceptable Manufacturer(s)

      1. Biamp/Community

      2. Danley

      3. Electrovoice

      4. Harman/JBL Pro

      5. Powersoft

      6. Martin Audio

      7. QSC

      8. Or Equal

   b. Two (2) input channels

   c. Two (2) output channels

   d. Input sensitivity @ 8 Ohms – 26 dB Gain – 5.03 Vrms

   e. 1200W maximum output per channel at 8 Ohms.

   f. S/N (20 Hz – 20kHz @ 8 Ohms) > 111 dB

8. One (1) CD/Bluetooth Player shall be provided and installed

   a. Acceptable Manufacturer(s)

      1. DENON

         A. DN-300Z

2. Or Equal.

b. Extended range Bluetooth antenna

c. AM/FM Radio Tuner

d. USB media player connectivity

e. Contractor shall supply all parts, cables and accessories to securely mount unit in provided cabinet.

f. Contractor shall provide all audio cables and accessories to integrate CD/Bluetooth player with provided mixer/DSP system.

9. One (1) Remote input location(s) shall be provided and installed in location identified on drawing.

a. Remote input location shall provide XLR and 3.5mm connectivity in identified location.

b. Contractor shall supply all cabling, faceplates and accessories for a complete installation.

c. Contractor shall integrate XLR and 3.5mm connection into provided DSP/Mixer system.

2.14 ALLOWANCES

A. Contractor shall include allowances for equipment and/or other contract service reimbursements as required below in base bid lump sum amount(s). Equipment and/or contract services shall be provided and sourced at Owner's discretion and convenience with full cooperation by Contractor and paid for from successful bidder's contract in the amount(s) provided for herein. Any allowance amount proving to be excessive for the intended equipment and/or contract services shall be credited to the Owner against contract payment requests.

1. Allowance shall be made in the amount of $2,500.00 for Owner directed infrastructure upgrades.

PART 3 - EXECUTION

3.01 PREPARATION

A. Contractor shall conduct detailed walk-through examination with Designer, Construction Manager and Owner verifying equipment and material locations as well as mounting and placement requirements prior to commencement of other installation activities.

B. Contractor shall insure all submittals and have been provided to, and approval has been obtained from Designer and Owner prior to commencement of any final installation activities. Submittals shall include, but not be limited to:

1. Shop drawings, data sheets and system diagrams including specific cable connectors and types proposed to be installed.

2. Asset tag format, composition, attachment method and location on each serialized component being provided.

3. Firmware configuration template to be used for each component provided.

4. Written installation, coordination and test procedure to be followed by installing technicians and engineers.

5. Final documentation template.

3.02 INSTALLATION

A. Contractor shall be familiar with the environment where work will be done as specified herein and make every reasonable effort to minimize interference with Owner's or other contractor's activities.

1. Appendices depicting general ceiling conditions for areas of buildings are included herein. Contractors shall field verify specific room conditions.

B. Work Areas shall be cleaned at the end of each day. All debris shall be cleared, removed and disposed of off premise. All equipment and tools shall be removed from common areas and stored in approved, secure storage locations.

1. Owner shall not be responsible for disposal or transportation of any packaging materials or other waste items.

2. Owner's waste containers including site dumpsters shall not be used for material disposal.

C. All equipment and materials shall be installed in a neat and workmanlike manner. Best practices installation principles shall be used throughout the project.

D. Removal & Storage of Existing Equipment

1. Contractor shall carefully remove existing equipment where identified including but not limited to all surface mounted speakers, amplifiers, document cameras and projectors and transport them to location indicated by Owner for Owner disposition.

E. The Contractor shall furnish, set in place, and install all equipment necessary for a fully compliant and operational system as specified herein. The installation process includes, but is not limited to the following:

1. Inventory receipt of all components and equipment.

2. Storage of all equipment and components until such time those items are installed according to the specifications.

3. Transport equipment to the Owner's installation location(s).

4. Assemble, install, configure and test all equipment and components, maintaining accurate inventory records and status documents and discarding packaging.

5. Collect all information necessary to accurately program all system devices to the Owner's intended use and need.

6. Label with asset tags and other markings provided by Owner all system devices as may be appropriate and required by Owner and Designer.

7. Work shall be performed to meet local codes and industry standards including proper grounding and bonding of installed equipment. Work shall conform to "best practices" observed by industry professional installers and as required by Owner and Designer.

8. Work shall include careful coordination and cooperation with others to insure a timely, cost effective and proper installation for Owner's intended application. Such efforts shall include, but not be limited to, coordinating and cooperating with other contractors, Owner, Designer and Engineer.

9. Where cables are to be routed through or on a finished wall, standard connectors must be used at the wall location to terminate call cables. All wall plates shall be stainless steel. Plastic or nylon plates shall not be acceptable. Cables routed out of a wall box on a finished wall without proper standard connection termination shall not be acceptable.

10. All cables shall be proper and adequately supported using hooks or rings no more than eight feet (8') apart. Cables supported by structural steel, ceiling grid or hanger wires will not be acceptable. All cable routing shall be neat and orderly.

11. All cable connecting components mounted in/on Technology Cart, shall have adequate cable slack to provide for full system inspection and or service without the removal (intentional or inadvertent) of connecting cables, including items that will be placed on the keyboard tray of equipment carts.

12. Label all cable connections for intuitive user access and as directed by Owner and Designer.

13. Work may include extending cables from installed equipment, and as required and/or specified herein, to Owner identified connection outlets.

    a. Work includes supply, connection and testing of any such cables.

    b. Cables for some devices may be routed in air plenum spaces, above finished ceilings, or in other ways require special care and suitable tools to complete. Where air plenum status is in question and/or may change, plenum rated cable shall be used.

14. DOCUMENT CAMERAS

    a. Connect AC power to outlet provided by others.

    b. Connect to document camera input location.

    c. Fully cooperate and coordinate with others for classroom workstation software installation. Installation will be performed by Owner.

15. PROJECTOR SCREENS

    a. Mount and test screens.

    b. Ensure proper CSR calibration.

16. VIDEO PROJECTORS

    a. Install, configure and test approved firmware configuration template including, but not limited to:

        1. Power on Image.

        2. Lamp setting.

        3. Firmware based Device ID (Including parameters such as: TCP/IP settings, Host Name, etc.).

        4. Default port selection.

    b. Neatly configure all cables as directed by Owner.

    c. Attach projector to mount using projector security mounting plate provided by others.

    d. Connect AC power using cord provided to projector.

e. Align projector with screen.

f. Set keystone adjustment(s) as required.

g. Zoom and focus projector as required.

h. Secure all adjustment points.

i. Remove and dispose of all existing screens, brackets, excess materials and packaging as directed by Owner.

17. PROJECTOR CEILING PLATES/BRACKETS/KITS

a. Contractor shall fully install all safety wires for a fully compliant installation.

18. VOICE AMPLIFICATION

a. Connect all audio input and output device cables.

b. Secure mounting location at projector location with mounting screws or Velcro pads to eliminate involuntary equipment movement.

c. Neatly route all cabling and secure slack.

d. Adjust balance levels for standard configuration.

e. Neatly route all cabling and secure slack.

F. It shall be the responsibility of the Contractor to repair or replace any damage done to the structure of finishes in the building by the Contractor. If in the course of work, Contractor damages, marks or misplaces any surfaces or access plates/panels the Contractor shall repair and/or replace the surface, plate or panel to the original condition.

1. Repairs shall include, but not be limited to patching and painting.

2. Final determination as to the damage condition and/or repair/replacement fitness of any surface, plate or panel shall be the sole responsibility of the Designer.

3. The building and work area shall be returned to its original condition prior to final sign off of the project.

G. Following installation and system “turn-up”, but prior to final acceptance of the system, Contractor shall conduct follow-up interviews with Owner identified administrators and staff to review system functionality, suitability and confirm feature and program fitness for Owner applications.

1. Follow-up interviews shall be fully documented by Contractor and submitted to Owner for approval.

H. All cable and device labels shall match existing standard.

I. Worksites include the following:

1. Delton Kellogg Elementary
   327 N. Grove Street
   Delton, Michigan 49046

3.03 TESTING

A. In an effort to ensure a smooth “turn-up” of the new system Contractor shall submit to a thorough testing process as defined herein prior to cut-over.

B. Prior to requesting testing by Designer, the Contractor shall use adequate means to assure the Work is completed in accordance with the specified requirements, meets the owner’s specific application requirements and is ready for functionality and integrity testing.

C. Testing Procedures

1. Prior to system “turn-up”, Contractor shall submit a written request and proposed test plan to Designer indicating they have completed full and final configuration of the system and are ready to have system integrity and functionality tested.

2. Within reasonable time after receipt of request, Designer will accept or revise the proposed test plan, provide a test schedule and coordinate testing date(s) with Owner and Contractor.

3. Should Designer determine the Work is not acceptably configured or not of adequate integrity:

   a. Designer promptly will so notify Contractor, giving reasons therefore and providing sufficient details to allow Contractor to make corrective actions.

   b. Contractor shall then expeditiously remedy the deficiencies and notify Designer in writing when ready for re-testing.

   c. Designer will schedule re-test of the Work.

   d. Excessive re-testing of Work may result in fees being assessed Contractor.

4. Should Designer and Owner concur the Work is configured properly and system integrity is as required:

    a. Designer will review Contractors detailed “turn-up” plan, and upon finding it acceptable issue a memorandum of Testing Completion to Owner and Contractor after which system “turn-up” can proceed.

3.04 DOCUMENTATION

A. Contractor shall, throughout the completion of the project, provide Owner a file storage system that shall include all necessary equipment, including if reasonably required, file drawers, folders, dividers, etcetera, to contain all as-built drawings, owner’s manuals of all equipment installed, warranty and maintenance information and other information the Contractor, Designer and/or Owner deem necessary. Documentation shall also be provided in a digital format in file formats and on media as specified by Owner and/or Designer.

B. Contractor shall be responsible for providing thorough, timely documentation on all hardware, software. Documentation shall include, but not be limited to:

1. Equipment description.
2. Equipment make.
3. Model number.
4. Software release.
5. Date installed.
6. Manufacturer's warranty.
7. Maintenance contract terms.
8. Verification of maintenance contract engagement.
9. Telephone numbers for service and support.
10. Detailed technical support and service procedure instructions.
11. All product (hardware and software) manuals and manufacturer supplied documentation, including, but not limited to owner manuals, system administrator manuals and configuration guides. Where number of duplicate copies for particular manual or documentation item could be reasonably considered excessive, Contractor shall request direction from Owner and Designer.

12. Photocopy of original invoice listing make and model for all components and equipment from individual manufacturer(s), distribution source(s), or authorized agent(s) to establish manufacturer warranty start date for potential use after end of contract warranty provisions.

13. CAD or Visio as built drawings/diagrams for each building.

14. System Configuration Report.

15. Complete inventory of installed hardware and system software including, but not be limited to, model numbers, Ethernet MAC address, serial numbers, physical installation location and software options.

3.05 TRAINING

A. No training shall be conducted prior to training outline and/or syllabus being approved by Owner, Instructional or overview activities conducted without prior content approval with not be deemed contract training, and Contractor shall remain responsible for delivery of approved training.

B. Contractor shall provide training for the Owner designated system administrator(s). Owner shall designate up to four (4) administrators to be trained. Training shall be a minimum of one (1), two (2) hour sessions in length, at the convenience of the Owner personnel, and of sufficient duration to satisfactorily complete training on all system administration functions including, but not limited to:

1. Basic trouble shooting of the installed system and components including diagnostic and problem resolution actions.

2. System back-up and restore functions and procedures for all system parameters and configurations.

3. Device additions, moves and changes as well as reconfiguration.

4. Review of system alerts, logs and monitoring of configuration parameters including, but not limited to and system configuration changes.

C. Contractor shall provide basic end user training for installed systems. Training shall be a minimum of two (1), one (1) hour sessions for each system type (Classroom AV, Gymnasium, ELA).

1. System power up and power down.

2. Source selection.

3. Volume control.

4. Voice amplification use.

5. Document camera operation.

6. System care and classroom maintenance best practices.

7. Equipment cart relocation and adjustments.

8. Screen operation and care.

9. Problem reporting.

D. "First day" training support shall be provided for all buildings during the initial day of the resumption of classes after installation. This training support shall provide users with assistance in problem diagnostics and "first day" operations of installed equipment. Adequate numbers of qualified support trainers shall be deployed to provide users with thirty (30) minute or less response on all support training requests. Owner will designate the appropriate day for this training to take place.

3.06 SCHEDULE, MEETINGS AND PLANS

A. Schedule

1. Final Vendor Presentations: Week of September 19, 2022

2. Contractor Chosen: Week of October 17, 2022

3. Work Commences: February 1, 2023

4. Substantial Completion of Project: August 1, 2023

5. Project Close-out: September 15, 2023

B. Planned sequence of operations shall be established by the Contractor within the guidelines established by the Owner, as required herein and as required to meet schedules.

C. All work shall be coordinated with Owner's construction manager on site.

D. Project progress meetings shall be held, but not limited to, weekly at a site and time identified as convenient for Owner and as required herein. Meetings will be attended as required herein.

END OF SECTION

SECTION 28 13 00
BUILDING ACCESS SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF PROJECT

A. Work described in this specification section pertains to additions and renovations to the existing Paxton access control system for the new Delton Kellogg Elementary School addition/renovation.

B. Contractor shall advise, coordinate, and work cooperatively with Owner representatives and/or owner's designee related to any installation or special security provisions.

C. The Contractor shall design, engineer, configure, supply, connect, test, document, train Owner representatives and warrant a fully operational and compliant system, complete and with full functionality as specified herein.

D. Contractor shall coordinate their installation with other contractors, Designer and the Owner as is appropriate.

E. Contractor shall fully coordinate and cooperate with door hardware vendor supplying the balance of items identified in section 08 71 00 as identified herein. All final connections, component integration, configuration, testing and programming functions to provide for a fully operational and functional system as specified shall remain the responsibility of Contractor selected for work in this section/division.

1.02 WARRANTY

A. Complete installation shall be free from defect and/or failure for a period of three (3) years. Any replacement, upgrade, or fix, including labor for any non-conforming or non-operational part of the system shall be fixed and/or replaced at no cost to the Owner.

B. Manufacturer's warranty shall be provided for all components of the system.

1. Any documents and/or submittals required by individual manufacturers for compliance with the standard and/or applicable extended warranty programs shall be provided and submitted for approval by the Contractor.

2. Contractor shall submit all documents, apply for warranty or extended warranty certification, and provide a Certificate of Warranty or Extended Warranty as may be applicable from the manufacturer prior to project closeout.

C. On site services provided under the warranty shall be performed by personnel or representatives of Contractor as herein defined and located within physical proximity to provide response levels deemed acceptable to Owner.

D. Contractor shall provide the following response times for all malfunctioning equipment:

1. Eight (8) hours or less for matters that render twenty percent (20%) or more of the system unable to maintain normal functionality.

2. Two (2) business days for matters not meeting the above criteria.

3. Response time shall be measured from the time Contractor is notified by Owner to the time work is begun to resolve the matter.

E. System Warranty shall commence on date of substantial completion as certified by Designer and provided for herein. Delivery to work site of materials, physical removal from packaging, issuance of Contractor documents including, but not limited to invoices and/or packing slips, or any event or documentation, not specifically provided for herein, shall have no effect on Warranty or System Acceptance by Owner and/or Designer.

1.03 STORAGE OF MATERIALS

A. All materials shall be secured when not in use by the Contractor.

B. It shall be the Contractor's responsibility to secure all equipment including material to be installed as part of the contract. No changes shall be made to the contract due to loss or theft of equipment and/or materials not officially accepted by the Owner.

C. Formal receipt of the materials shall not be completed by the Owner until completion of project closeout. The Contractor shall be responsible for all equipment until time of closeout as provided for herein.

1.04 SUBMITTALS

A. Submittals shall consist of, but not be limited to, technical cut sheets and detailed information pamphlets on all components of the system to be installed. All cut sheets and submittals shall be distinctly marked to highlight the actual part number of the item being submitted for approval with Bid Proposals.

B. Shop drawings and diagrams shall be submitted by Bidder for approval by Designer with Bid Proposals.

1. Shop drawings and diagrams shall show all data relating to structural, electrical, wiring, cross connect, interconnect, equipment

arrangement/layout, and any other information deemed significant by the Designer.

2. No work constituting final installation shall be commenced until after approval of shop drawings by Designer.

C. Contractor shall provide proof of manufacturer support by photocopy of certification and letter of support from major component manufacturers for this specific project with Bid Proposals.

D. Equipment or material installed for this project that does not have an approved submittal associated with it, will be removed, and replaced with acceptable equipment or material as defined by the Designer. All replacement costs including, but not limited to material and labor, shall be the sole responsibility of the Contractor.

1. The Owner and/or Designer may notify Contractor of any offending situations under this provision allowing Contractor up to forty-eight (48) hours to correct the situation prior to taking other corrective action.

2. The Owner reserves the right to replace unapproved materials and deduct the costs of doing so as defined herein from any amounts that may be due, or become due Contractor.

E. The Contractor shall submit within ten (10) calendar days after the Notice to Proceed, a schedule that reflects the sequence of activities of the contractor's approach to the execution of and completion of the work. The schedule shall be broken into work areas to provide for a clear identification of the planned progress of the work. Included in the schedule will be a list of tasks with list of deliverables and the percentage of work completed. This schedule shall coincide with progress payments applications dates and projected amounts. All durations shown will be in working days. The timeframe described in the Contractor's Schedule shall represent the Contractor's plan for organizing, directing, managing, controlling, staffing, and executing the work required by the Contract Documents. Owner will rely on such schedules to coordinate and otherwise plan related work of Owner personnel, other separate contractors, or the Owner’s routine daily work.

1.05 REFERENCE SPECIFICATIONS

A. All work, products, and materials shall conform with the following standards as applicable for the intended use:

1. IEEE

2. EIA/TIA Commercial and Administration Standards

3. NEC

4. FCC – All Applicable Rules and Regulations

5. UL

6. MIOSHA Safety Standards

1.06 CONTRACTOR

A. The Contractor shall accept complete responsibility for the installation, certification, and support of the system. Contractor shall be an authorized vendor of all major components.

B. All work shall be performed and supervised by Project Managers, Engineers and/or Technicians who are qualified to install system and perform related tests as recommended by the manufacturer and in accordance with the manufacturer's best practices and methods.

C. Contractor shall comply with Owner's policies related to background checks for any personnel who work on the project.

D. Project Managers, Engineers and Technicians employed on this project shall be properly and fully trained and qualified by the manufacturer on the installation and testing of the equipment and systems to be installed.

E. The Contractor shall have a proven track record in security system configuration and installation. This must be shown by the inclusion of references of at least three (3) projects involving the installation of similar systems completed by the Contractor in the prior two (2) years on unaltered forms with the sealed Bid Proposal as provided herein. Bid Proposal Form(s) may be duplicated as required in order to provide adequate space to list required number of reference installations for each division Bidder is responding to.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers (In alphabetical order):

1. 2N

2. PAXTON

2.02 Supply most current version of all products provided.

A. Manufacturer shall have five (5) years of experience and history manufacturing similar products to those specified.

B. Proposed components shall have been field tested and proven in actual use.

C. Prior and/or old versions of products, unless specifically approved and documented by Designer and/or Owner shall not be acceptable.

D. In cases where a newer version of hardware or software is available at the time of installation, Contractor shall request clarification from Designer on which version is to be used.

2.03 Furnish only new, first-class quality materials and equipment.

2.04 System shall be comprised of interoperable components including, but not limited to, controller, credential sensors and management software integrated into a common working system.

2.05 System administrator shall be capable of complete system back-up and full system restoration from a previously saved configuration.

2.06 System shall be of a distributed processing design with a fully distributed database including, but not limited to time, date, valid codes, access levels and related data so that each Controller makes access control decisions for that location. If communications with central station equipment is lost, all transactions shall be buffered until the restoration of a connection to the central station.

2.07 In the event of a power failure, complete system shall automatically re-initialize and "become active" to the last configuration in use with no human intervention.

2.08 Contractor shall be responsible for final and working system. Use of existing components and materials provided by others during new construction shall be integral to system configuration and cost-effective installation. Bidders are encouraged to use all compatible and working components in system solution. See schedule(s) and reference files for additional detail.

2.09 CENTRAL MANAGEMENT SOFTWARE

A. Central management software shall meet or exceed the following:

1. Contractor shall supply all necessary licensing, labor and accessories to integrate new door access components with existing Paxton Net2 door access system. Licensing shall be valid for the term of the warranty specified.

2. Contractor shall supply and install all necessary licensing and labor to upgrade existing Paxton Net2 software to the latest version for a fully functional system.

3. Contractor shall fully configure Paxton Net2 software to Owner requirements for a fully functional system.

a. Configuration shall include but not be limited to definition of access groups, schedules and door groups per Owners' requirements.

2.10 CONTROLLERS

A. Contractor shall supply appropriate Paxton Net2 Plus door controllers with 24v power supply to each door identified.

B. Contractor shall supply metallic enclosure for door controllers to protect and secure devices. Contractor shall supply fire resistant backboard if necessary. All controller devices shall be installed in building IDF locations.

2.11 CREDENTIAL READERS

A. New Paxton Credential Readers shall be provided in locations identified and as specified herein.

1. Read Owner or Contractor supplied credentials.

2. DC powered from associated Controller

3. Compatible with industry standard 125 kHz proximity contactless technologies.

4. Response time for passage requests of 800ms.

5. Sealed weatherproof shell enclosure rated for outdoor operation.

6. Surface mounted on exterior surface of structure.

a. Contractor shall supply either mullion or full-sized wall mount style depending on mounting conditions.

7. LED or other type of visual indicator indicating request status.

8. Audible status indicator upon user prompt.

9. Range of four inches (4").

10. IP65 Rating

2.12 DOOR INTERFACE HARDWARE

A. Where new Credential Readers are to be provided, the door interface hardware provided by others shall meet or exceed the following:

1. 12v PoE low voltage strikes will be provided by others as part of Section 08700 work and shall be integrated into the Credential Readers installation by Contractor where indicated on drawings and as specified herein.

a. Contractor shall supply necessary manufacturer supported cable to connect strike to Contractor supplied Credential Readers.

b. Contractor shall be responsible for installation and integration of cabling in pathways in door frames provided by Others.

c. Contractor shall be responsible for connecting and integrating any voltage regulation hardware (Smart Pac) if identified in door schedule.

2. 24v electric latch retraction door exit devices will be provided by Others as part of the Section 08700 work and shall be integrated with credential reader installation by Contractor where identified on drawings and as specified herein.

   a. Contractor shall supply necessary manufacturer supported cable to connect latch retraction device to Contractor Credential Readers.

   b. Contractor shall be responsible for installation and integration of cabling in pathways in door frames provided by Others.

   c. Contractor shall be responsible for the mounting and configuration of necessary 24V power supplies to power door hardware indicated on door schedule. Contractor will work collaboratively with electrical contractor to safely connect provided power supplies.

3. Door sets of 1 will operate as follows:

   a. Contractor to integrate card reader with provided electric strike or latch retraction hardware. Door will be unlocked in the event of a successful card read.

   b. Contractor to supply all necessary cabling and installation for a fully functional system.

4. Door sets of 2 will operate as follows:

   a. Contractor to integrate card reader with either electric strikes or electric latch retraction devices where applicable. In the event of a successful card read, both doors should unlock.

5. Door sets of 4 will operate as follows:

   a. Door 1, closest to card reader, will be integrated with provided card reader and will unlock in the event of a successful card read.

   b. Doors 2-4 will be operable to unlock on a schedule. Contractor shall supply necessary door controller and all necessary cabling and accessories for a fully functional system for each set of doors.

6. All door strike and latch retraction cables shall of a sufficient length to be neatly routed by Contractor, to a location suitable to reach Credential Reader and/or power supply for door(s).

7. Provided Credential Readers and Door Controllers shall be integrated with door handicap operators where applicable. Contractor shall supply all labor and accessories to integrate Credential reader with handicap operators for a safe and fully functional system. Contractor shall work collaboratively with handicap operator installers to verify the following functionality:

    a. External operator buttons shall only be functional in the event of a successful card read or remote door unlatch. Door operator motor should only be operable in the event of a successful card read.

    b. Internal operator buttons shall be functional at all times, appropriate electrified hardware should unlock automatically to allow safe egress.

    c. Contractor to supply all hardware necessary including accessories and installation to enable this capability.

2.13 ELECTRIC STRIKE (PRESCHOOL ENTRANCE ONLY)

A. Electric strike devices shall be provided and installed in locations as identified in provided drawings and as specified herein. Electric strike devices shall meet or exceed the following:

    1. End-of-line resistors terminated at the controller to protect against surges generated by activation of electric door strikes.

    2. Door Interface Hardware shall be Low Current Draw devices from Trine 4000 Series, Trine EN Series, or ASSA ABLOY equivalent.

    3. Appropriate Door Interface Hardware model and type shall match and be compatible with existing door hardware types and conditions.

B. In locations where Door Interface Hardware is to be installed on a removable mullion, contractor shall provide adequate slack cable and a secure and durable, “quick disconnect point” on power cable for easy and damage free removal and replacement of mullion.

2.14 DOOR POSITION SWITCH (DPS)

A. Where new door controllers are to be provided, each door shall be equipped with magnetic DPS and shall be integrated into the door controller installation by Contractor.

B. DPS devices shall be mounted internally to the frame and door wherever possible and shall not be surface mounted except for in rare cases without alternative “hidden” mounting options being available and must be approved by the Designer and Owner on a case-by-case basis.

2.15 HIDDEN DOOR RELEASE SWITCHES

A. Door release switches are to be provided in locations identified on provided drawings as specified herein.

1. Door release switches shall meet or exceed the following requirements:

a. ALLEGION 660-PB or ASSA ABLOY equivalent.

B. Hidden door release switches shall be programmed to provide door release capabilities for doors identified on provided drawings. Contractors shall supply all necessary cabling, labor and accessories to integrate hidden door release switches with Contractor provided door controllers.

2.16 COMPONENT INTERCONNECTION

A. All wiring not installed in conduit shall be plenum type cable and shall be so identified with continuous marking.

B. Wiring color shall remain the same throughout the system. Colors used for coding shall be as directed by the system manufacturer, Owner, and Designer.

C. Wire shall be copper.

2.17 NETWORK VIDEO DOOR STATIONS

A. Network Video Door Stations shall be provided at entrances of the facility as identified on provided drawings and as provided for herein. See locations as identified on drawings as IC (Administration Entrance and Preschool Entrance).

B. Acceptable Manufacturer(s)

1. 2N

a. IP Base

2. Activity/motion detection

3. 30fps Maximum Frame Rate at full resolution

4. 10/100/1000 Ethernet (RJ-45) connector

5. Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3b

6. SIP Compatible

7. IP65- and NEMA 4X-rated

8. Operating temperature range from -25 °C to 55 °C (-13 °F to 131 °F)

9. Contractor shall be responsible to integrate new door stations with the Owner's telephone system for common office operations. No dedicated door station console will be used.

10. Contractor shall integrate provided network video door station with provided door access equipment where applicable.

    a. Contractor shall be responsible for the supply and installation of any cabling and accessories necessary to connect door station(s) to indicated door hardware.

11. Contractor shall work collaboratively with Owner to configure door station for integration with Owner provided VOIP system to remotely unlock doors.

12. Contractor shall provide and help to configure software at Owner provided computers to allow remote video viewing and unlock.

13. Contractor shall supply and install 2N Indoor Compact base station with appropriate accessories for desktop mounting.

2.18 ALLOWANCES

A. Contractor shall include allowances for equipment and/or other contract service reimbursements as required below in base bid lump sum amount(s). Equipment and/or contract services shall be provided and sourced at Owner's discretion and convenience with full cooperation by Contractor and paid for from successful bidder's contract in the amount(s) provided for herein. Any allowance amount proving to be excessive for the intended equipment and/or contract services shall be credited to the Owner against contract payment requests.

    1. Allowance shall be made in the amount of $2,500.00 for contract services related to supply, installation and connection of related Owner provided hardware.

PART 3 - EXECUTION

3.01 PREPARATION

A. Contractor shall conduct detailed walk-through examination with Designer and Owner verifying equipment and material locations as well as mounting

and placement requirements prior to commencement of other installation activities.

B. Contractor shall insure all submittals and shop drawings have been provided to, and approval has been obtained from Designer prior to commencement of any final installation activities.

3.02 INSTALLATION

A. Contractor shall be familiar with the environment where work will be done as specified herein and make every reasonable effort to minimize interference with Owner's or other contractor's activities.

B. Work Areas shall be cleaned at the end of each day. All debris shall be cleared, removed, and disposed of in an approved container for the site. All equipment and tools shall be removed from common areas and stored in approved, secure storage locations. Any work that may impede the general use of the space and/or other contractor's work and cannot be removed shall be flagged and cordoned off by the Contractor prior to their departure.

C. All equipment and materials shall be installed in a neat and workmanlike manner. Best practices installation principles shall be used throughout the project.

D. The Contractor shall furnish, set in place, and install all equipment necessary for a fully compliant and operational system as specified herein. The installation process includes, but is not limited to the following:

1. Inventory receipt of all components and equipment.

2. Storage of all equipment and components until such time those items are installed according to the specifications.

3. Transport equipment to the Owner's installation location(s).

4. Assemble, install, configure, and test all equipment and components, maintaining accurate inventory records and status documents and discarding packaging.

5. Collect all information necessary to accurately program all system devices to the Owner's intended use and need.

6. Label all system devices as may be appropriate and required by Owner and Designer.

7. Complete end user and system administrator training programs as specified herein.

8. Work shall be performed to meet local codes and industry standards including proper grounding and bonding of installed equipment.

9. New Door Locations

    a. Connect door controller to Owner's PoE+ data network using Contractor supplied patch cords at both ends of tested and certified cable drop supplied by others and verify connection to Central Management Software.

    b. Test to ensure that all components are functioning and configured properly.

        1. Doors shall be configured to remain locked until a valid credential is presented.

        2. Electric strikes shall be unlocked when energized.

        3. Door position switches shall report door status to central management software.

    c. Where possible, all cabling shall be installed inside walls, doors, door frames, and mullions. Provide appropriate metallic channels for cables in locations where it is not possible to install otherwise. There shall be no exposed cabling.

    d. All devices shall be securely attached to building structure using manufacturer's installation recommendations and industry best practices.

10. New Construction Locations:

    a. Coordinate with Owner's Construction Manager, construction trades and hardware suppliers to ensure functionality of doors provided for herein and as described in respective construction specification documents.

    b. Provide licensing and central management system configuration(s) for all devices provided for herein and as described in respective construction specification documents.

E. Worksites include the following:

1. Delton Kellogg Elementary
   327 N. Grove Street
   Delton, Michigan 49046

F. It shall be the responsibility of the Contractor to repair or replace any damage done to the structure of finishes in the building by the Contractor. If in the course of work, Contractor damages, marks, or misplaces any surfaces or access plates/panels the Contractor shall repair and/or replace the surface, plate, or panel to the original condition.

1. Final determination as to the damage condition and/or repair/replacement fitness of any surface, plate or panel shall be the sole responsibility of the Designer.

2. The building and work area shall be returned to its original condition prior to final sign off of the project.

G. Following installation and system "turn-up", but prior to final acceptance of the system, Contractor shall conduct follow-up interviews with Owner identified administrators and staff to review system functionality, suitability and confirm feature and program fitness for Owner applications.

1. Follow-up interviews shall be fully documented by Contractor and submitted to Owner for approval.

3.03 TESTING

A. To ensure a smooth "turn-up" of the new system Contractor shall submit to a thorough testing process as defined herein prior to cut-over.

B. Prior to requesting testing by Designer, the Contractor shall use adequate means to assure the Work is completed in accordance with the specified requirements, meets the owner's specific application requirements and is ready for functionality and integrity testing.

C. Testing Procedures

1. Prior to system "turn-up", Contractor shall submit a written request to Designer indicating they have completed full and final configuration of the system and are ready to have system integrity and functionality tested.

2. Within reasonable time after receipt of request, Designer will provide a test schedule and coordinate testing date(s) with Owner and Contractor.

3. Should Designer determine the Work is not acceptably configured or not of adequate integrity:

a. Designer promptly will so notify Contractor, giving reasons therefore and providing sufficient details to allow Contractor to make corrective actions.

b. Contractor shall then expeditiously remedy the deficiencies and notify Designer in writing when ready for re-testing.

c. Designer will schedule re-test of the Work.

d. Excessive re-testing of Work may result in fees being assessed Contractor.

4. Should Designer and Owner concur the Work is configured properly and system integrity is as required:

a. Designer will review Contractors detailed “turn-up” plan, and upon finding it acceptable issue a memorandum of Testing Completion to Owner and Contractor after which system “turn-up” can proceed.

3.04 DOCUMENTATION

A. Contractor shall, throughout the completion of the project, provide Owner a file storage system that shall include all necessary equipment, including if reasonably required, file drawers, folders, dividers, etcetera, to contain all as-built drawings, owner’s manuals of all equipment installed, warranty and maintenance information and other information the Contractor, Designer and/or Owner deem necessary. Documentation shall also be provided in a digital format in file formats and on media as specified by Owner and/or Designer.

B. Contractor shall be responsible for providing thorough, timely documentation on all hardware, software. Documentation shall include, but not be limited to:

1. Equipment description.

2. Equipment make.

3. Model number.

4. Software release.

5. Date installed.

6. Manufacturer's warranty.

7. Maintenance contract terms.

8. Verification of maintenance contract engagement.

9. Telephone numbers for service and support.

10. Detailed technical support and service procedure instructions.

11. All product (hardware and software) manuals and manufacturer supplied documentation, including, but not limited to owner manuals, system administrator manuals and configuration guides. Where number of duplicate copies for particular manual or documentation item could be reasonably considered excessive, Contractor shall request direction from Owner and Designer.

12. Photocopy of original invoice listing make and model for all components and equipment from individual manufacturer(s), distribution source(s), or authorized agent(s) to establish manufacturer warranty start date for potential use after end of contract warranty provisions.

13. CAD as built drawings for each building.

14. System Configuration Report.

15. Complete inventory of installed hardware and system software. Hardware inventory shall include, but not be limited to, model numbers, serial number, physical installation location and software/firmware options.

3.05 TRAINING

A. Training shall be conducted at the Owner's discretion and at times and places convenient to Owner personnel. Prior to any training being conducted, Contractor shall provide Owner and Designer with detailed training syllabus and schedule for proposed training event. Compliant syllabus and schedule shall be provided at least ninety-six 96 hours in advance. Owner reserves the right to postpone training if syllabus and/or schedule submitted are deemed inadequate. Training shall not be conducted until such time a syllabus and schedule submitted by Contractor are found to be acceptable to Owner.

B. Contractor shall provide training for the Owner designated system operators(s). Owner shall designate up to six (6) system operators to be trained. Training shall be a minimum of one (1), four (4) hour session(s) in length, at the convenience of the Owner personnel, and of sufficient duration to satisfactorily complete training on all system administration functions including, but not limited to:

1. Basic credential and user adds, changes, and management.

2. Creation of, review of, communication of and response to system alerts.

3. Review of system alerts, logs and monitoring of configuration parameters including, but not limited to, configuration changes and device status.

C. Contractor shall provide training for the Owner designated system administrator(s). Owner shall designate up to four (4) administrators to be trained. Training shall be a minimum of one (1), four (4) hour session(s) in

length, at the convenience of the Owner personnel, and of sufficient duration to satisfactorily complete training on all system administration functions including, but not limited to:

1. Basic trouble shooting of the installed system and components including diagnostic and problem resolution actions.

2. System back-up and restore functions and procedures for all system parameters and configurations.

3. Review of system alerts, logs and monitoring of configuration parameters including, but not limited to, configuration changes and device status.

3.06 SCHEDULE, MEETINGS AND PLANS

A. Schedule

1. Final Vendor Presentations: Week of September 19, 2022

2. Contractor Chosen: Week of October 17, 2022

3. Work Commences: February 1, 2023

4. Substantial Completion of Project: August 1, 2023

5. Project Close-out: September 15, 2023

B. Planned sequence of operations shall be established by the Contractor within the guidelines established by the Owner, as required herein and as required to meet schedules.

C. All work shall be coordinated with Owner's construction manager on site.

D. Project progress meetings shall be held, but not limited to, weekly at a site and time identified as convenient for Owner and as required herein. Meetings will be attended as required herein.

END OF SECTION

SECTION 28 23 00
VIDEO MONITORING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF PROJECT

A. Work described in this specification section pertains to a Video Monitoring System for Delton Kellogg Schools.

B. Owner intends to install an IEEE Ethernet compliant Video Monitoring System covering the sites referred herein. Owner intends cameras installed to provide for monitoring both within the building and outside the site indicated.

C. Contractor shall propose a System to be deployed using IEEE Ethernet technology. The system components shall be installed and connected to the owner's Ethernet infrastructure and as specified herein. System shall be of a "network" architecture using Ethernet cameras and centrally located Ethernet server(s).

1. Owner will provide adequate IEEE 802.3at 10/100/1000 Ethernet switch ports for the number of devices specified herein.

D. The centralized server recording equipment will be installed by others in Owner's data center and as required. Contractor shall identify the needed hardware and operating system software needed for the central server(s) and storage of the proposed system. Owner will procure and cause to have installed and configured the equipment for the Contractor to install their control software on.

E. Contractor shall advise, coordinate and work cooperatively with Owner representatives or owner's designee related to any configuration changes required and/or proposed for Owner's existing Ethernet infrastructure (VLAN configuration, QoS mapping, routing, Firewall security provisions etc.).

F. The Contractor shall design, engineer, configure, supply, connect, test, document, train Owner representatives and warrant a fully operational and compliant network video monitoring system, complete and with full functionality as specified herein.

G. Contractor shall coordinate their installation with other contractors, Designer and the Owner as is appropriate.

1.02 WARRANTY

A. Complete installation shall be free from defect and/or failure for a period of three (3) years. Any replacement, upgrade or fix, including labor for any non-

conforming, unsupportable or non-operational part of the system shall be fixed and/or replaced at no cost to the Owner. System shall qualify for manufacturer support at all times during the warranty period.

B. Manufacturer's warranty shall be provided for all components of the system.

   1. System integrator or local vendor warranty, without underlying manufacturer's warranty/extended warranty will not be considered an acceptable base bid.

   2. Any documents and/or submittals required by individual manufacturers for compliance with the standard and/or applicable extended warranty programs shall be provided and submitted for approval by the Contractor.

   3. Contractor shall submit all documents, apply for warranty or extended warranty certification, and provide a Certificate of Warranty or Extended Warranty as may be applicable from the manufacturer prior to project closeout.

C. On site services provided under the warranty shall be performed by personnel or representatives of Contractor as herein defined and located within physical proximity to provide response levels deemed acceptable to Owner and without additional charge for any offending components.

D. Contractor shall provide the following response times for all malfunctioning equipment:

   1. Twenty-four (24) hours or less for matters that render twenty percent (20%) or more of the system unable to maintain normal functionality.

   2. Two (2) business days for matters not meeting the above criteria.

   3. Response time shall be measured from the time Contractor is notified by Owner to the time work is begun to resolve the matter.

E. Bidder shall provide current annual maintenance contract pricing for recommended maintenance programs for all equipment following the specified and included warranty. This information will be considered by Owner and Designer as part of the bid evaluation process.

F. System Warranty shall commence on date of substantial completion as certified by Designer and provided for herein. Delivery to work site of materials, physical removal from packaging, issuance of Contractor documents including, but not limited to invoices and/or packing slips, or any event or documentation, not specifically provided for herein, shall have no effect on Warranty or System Acceptance by Owner and/or Designer.

1.03 STORAGE OF MATERIALS

A. All materials shall be secured when not in use by the Contractor.

B. It shall be the Contractor's responsibility to secure all equipment including material to be installed as part of the contract. No changes shall be made to the contract due to loss or theft of equipment and/or materials not officially accepted by the Owner.

C. Formal receipt of the materials shall not be completed by the Owner until completion of project closeout. The Contractor shall be responsible for all equipment until time of closeout as provided for herein.

1.04 SUBMITTALS

A. Submittals shall consist of, but not be limited to, technical cut sheets and detailed information pamphlets on all components of the system to be installed. All cut sheets and submittals shall be distinctly marked to highlight the actual part number of the item being submitted for approval with Bid Proposals.

B. Shop drawings and diagrams shall be submitted by Bidder for approval by Designer with Bid Proposals.

    1. Shop drawings and diagrams shall show all data relating to structural, electrical, wiring, cross connect, interconnect, equipment arrangement/layout, and any other information deemed significant by the Designer.

    2. No work constituting final installation shall be commenced until after approval of shop drawings by Designer.

C. Contractor shall provide proof of manufacturer support by photocopy of certification and letter of support from major component manufacturers for this specific project with Bid Proposals.

D. Equipment or material installed for this project that does not have an approved submittal associated with it, will be removed, and replaced with acceptable equipment or material as defined by the Designer. All replacement costs including, but not limited to material and labor, shall be the sole responsibility of the Contractor.

    1. The Owner and/or Designer may notify Contractor of any offending situations under this provision allowing Contractor up to forty-eight (48) hours to correct the situation prior to taking other corrective action.

2. The Owner reserves the right to replace unapproved materials and deduct the costs of doing so as defined herein from any amounts that may be due or become due Contractor.

E. The Contractor shall submit within ten (10) calendar days after the Notice to Proceed, a schedule that reflects the sequence of activities of the contractor's approach to the execution of and completion of the work. The schedule shall be broken into work areas to provide for a clear identification of the planned progress of the work. Included in the schedule will be a list of tasks with list of deliverables and the percentage of work completed. This schedule shall coincide with progress payments applications dates and projected amounts. All durations shown will be in working days. The timeframe described in the Contractor's Schedule shall represent the Contractor's plan for organizing, directing, managing, controlling, staffing and executing the work required by the Contract Documents. Owner will rely on such schedules to coordinate and otherwise plan related work of Owner personnel, other separate contractors, or the Owner’s routine daily work.

1.05 REFERENCE SPECIFICATIONS

A. All work, products, and materials shall conform with the following standards as applicable for the intended use:

1. EIA/TIA Commercial and Administration Standards
2. NEC
3. IEEE 802
4. IETF RFCs
5. FCC – All Applicable Rules and Regulations
6. UL
7. MOSHA Safety Standards

1.06 CONTRACTOR

A. The Contractor shall accept complete responsibility for the installation, certification and support of the system. Contractor shall be an authorized vendor of all major components.

B. All work shall be performed and supervised by Project Managers, Engineers and/or Technicians who are qualified to install system and perform related tests as recommended by the manufacturer and in accordance with the manufacturer’s best practices and methods.

C. Project Managers, Engineers and Technicians employed on this project shall be properly and fully trained and qualified by the manufacturer on the installation and testing of the equipment and systems to be installed.

D. The Contractor shall have a proven track record in video monitoring system configuration and installation. This must be shown by the inclusion of references of at least three (3) projects involving the installation of similar systems completed by the Contractor in the prior two (2) years on unaltered forms with the sealed Bid Proposal as provided herein. Bid Proposal Form(s) may be duplicated as required in order to provide adequate space to list required number of reference installations for each division Bidder is responding to.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers (In alphabetical order):

1. AXIS COMMUNICATIONS

2. EXACQVISION

2.02 Supply most current version of all products provided.

A. Manufacturer shall have five (5) years of experience and history manufacturing similar products to those specified.

B. Proposed components shall have been field tested and proven in actual use.

C. Prior and/or old versions of products, unless specifically approved and documented by Designer and/or Owner shall not be acceptable.

D. In cases where a newer version of hardware or software is available at the time of installation, Contractor shall request clarification from Designer on which version is to be used.

2.03 Furnish only new, first-class quality materials and equipment.

2.04 System shall be comprised of interoperable components including, but not limited to, control software resident on Owner provided centrally located server, Ethernet attached cameras, camera mounting brackets and housings, patch cords and management software integrated into a common working system.

2.05 CENTRAL VIDEO MONITORING CONTROL SOFTWARE

A. Contractor shall provide and install Exacqvision Enterprise licensing for all provided devices **and** an additional one-hundred and twenty (120) licenses for

existing camera devices. Licensing shall be installed and configured on existing Exacqvision Enterprise installation. Licensing shall be for five (5) years.

B. Contractor shall integrate new camera devices into existing Exacvision Enterprise software installation on Owner provided servers.

2.06 CAMERAS

A. Ethernet cameras shall be provided. See Appendix F: Camera Diagrams, Appendix G: Camera Schedule, and drawings provided herein for information on quantity and locations. Cameras shall meet or exceed the following specified capabilities:

1. Interior Standard Resolution (Type A)

a. Axis P3265-LV or approved Axis equal

b. 90+ degree horizontal viewing angle

c. Remote focus

d. Activity/motion detection

e. 0.1 lux at 50 IRE, F1.8 minimum illumination (Color)

f. 1920 x 1080 Image Size (1080p Resolution)

g. H.264 Compression

h. H.265 Compression

i. Motion JPEG Compression

j. 25fps Maximum Frame Rate at 1080p resolution

k. 10/100 Ethernet (RJ-45) connector

l. IEEE 802.3at Power over Ethernet

m. Operating temperature range from 35 – 120 degrees Fahrenheit.

n. Internal image memory for motion-based buffering

o. Cameras shall be installed in mechanical flush mounted, integrated, tamper and impact resistant dome enclosure mount adapter to facilitate installation either directly on walls, to a ceiling or to a single gang electrical box providing 10/100/1000

PoE+ UTP connection for installed camera. Domes shall also meet or exceeding the following requirements:

1. Optically correct polycarbonate lower dome with light loss not greater than 11.5 f-stops.

2. Dust and water protection based.

3. Puncture resistant with capability to withstand a pointed impact force of 35 foot-pounds without creating an internal depression greater than .2 inches.

4. Impact resistant with capability to withstand repeated multiple blunt impact forces up to 100 foot-pounds.

5. Camera shall include all necessary mounting hardware and accessories for a fully supported installation.

2. Interior High-Resolution Cameras (Type B)

    a. Axis P3267-LV or approved Axis equal

    b. Activity/motion detection

    c. 0.18 lux at 50 IRE, F1.7 minimum illumination (Color)

    d. 2592 x 1944 Image Size (5MP Resolution)

    e. H.264 Compression

    f. Motion JPEG Compression

    g. 25fps Maximum Frame Rate at 5MP resolution

    h. 10/100 Ethernet (RJ-45) connector

    i. IEEE power over Ethernet 802.3at compliance

    j. Internal image memory for motion-based buffering

    k. Operating temperature range from -35 – +120 degrees Fahrenheit.

    l. Cameras shall be installed in integrated, tamper and impact resistant, environmentally controlled dome enclosure meeting or exceeding the following requirements:

        1. Optically correct acrylic or polycarbonate lower dome with integral UV protection.

2. Dust and water protection based on EN60529 standard of IP66.

3. Optically correct acrylic or polycarbonate lower dome with light loss not greater than 11.5 f-stops and integral UV protection.

4. Integral sun shroud when mounted outside.

5. Impact resistant with capability to withstand repeated multiple blunt impact forces up to 100 foot-pounds.

6. Camera shall include all necessary mounting hardware and accessories for a fully supported installation.

7. Contractor shall include appropriate protective cage in gym location.

3. Interior Multidirectional – Dual Sensor (Type C)

a. P3715-PLVE or approved Axis equal

b. Two (2) lenses in a single camera housing with combined horizontal angle of view of 180 degrees

c. Activity/motion detection

d. 0.17 lux at 50 IRE F1.8 minimum illumination (Color)

e. 1920 x 1080 Image Size per image sensor (lens) (x2)

f. H.264 Compression

g. H.265 Compression

h. Motion JPEG Compression

i. 25fps Maximum Frame Rate at full resolution

j. 10/100 Ethernet (RJ-45) connector

k. IEEE power over Ethernet (802.3at) compliance

l. Internal image memory for motion-based buffering

m. Operating temperature range from -22 – +112 degrees Fahrenheit.

n. Cameras shall be installed in integrated, tamper and impact resistant, environmentally controlled dome enclosure meeting or exceeding the following requirements:

1. Optically correct acrylic or polycarbonate lower dome with integral UV protection.

2. Dust and water protection based on EN60529 standard of IP66.

3. Integral sun shroud where installed outdoors

4. Available integrated enclosure or “Gooseneck” and “Corner” wall mount adapter to comply with installation either directly on exterior walls or to a single gang electrical box and as identified herein, providing 10/100/1000 PoE+ UTP connection for installed camera.

5. Impact resistant with capability to withstand repeated multiple blunt impact forces up to 100 foot-pounds.

6. Camera shall include all necessary mounting hardware and accessories for a fully supported installation.

4. Interior Multidirectional – Quad Sensor (Type D)

a. Axis P3719-PLE or approved Axis equal

b. Four (4) lenses in a single camera housing with combined horizontal angle of view of 360 degrees

c. Activity/motion detection

d. 0.2 lux at 50 IRE F1.8 minimum illumination (Color)

e. 15 MP, 360 degree multidirectional

f. H.264 Compression

g. H.265 Compression

h. Motion JPEG Compression

i. 25fps Maximum Frame Rate at full resolution

j. 10/100 Ethernet (RJ-45) connector

k. IEEE power over Ethernet (802.3at) compliance

l. Internal image memory for motion-based buffering

m. Operating temperature range from -22 – +112 degrees Fahrenheit.

n. Cameras shall be installed in integrated, tamper and impact resistant, environmentally controlled dome enclosure meeting or exceeding the following requirements:

1. Optically correct acrylic or polycarbonate lower dome with integral UV protection.

2. Dust and water protection based on EN60529 standard of IP66.

3. Integral sun shroud where installed outdoors

4. Available integrated enclosure or "Gooseneck" and "Corner" wall mount adapter to comply with installation either directly on exterior walls or to a single gang electrical box and as identified herein, providing 10/100/1000 PoE+ UTP connection for installed camera.

5. Impact resistant with capability to withstand repeated multiple blunt impact forces up to 100 foot-pounds.

6. Camera shall include all necessary mounting hardware and accessories for a fully supported installation. Contractor shall supply and install exterior corner mount pendant mount in all corner location.

5. Exterior Standard Resolution (Type E)

a. Axis P3265-LVE or approved Axis equal

b. Activity/motion detection

c. 0.18 lux at 50 IRE, F1.7 minimum illumination (Color)

d. 1920 x 1080 Image Size

e. H.264 Compression

f. Motion JPEG Compression

g. 25fps Maximum Frame Rate at 5MP resolution

h. 10/100 Ethernet (RJ-45) connector

i. IEEE power over Ethernet 802.3at compliance

j. Internal image memory for motion-based buffering

k. Operating temperature range from -35 – +120 degrees Fahrenheit.

l. Cameras shall be installed in integrated, tamper and impact resistant, environmentally controlled dome enclosure meeting or exceeding the following requirements:

1. Optically correct acrylic or polycarbonate lower dome with integral UV protection.

2. Dust and water protection based on EN60529 standard of IP66.

3. Optically correct acrylic or polycarbonate lower dome with light loss not greater than 11.5 f-stops and integral UV protection.

4. Integral sun shroud when mounted outside.

5. Impact resistant with capability to withstand repeated multiple blunt impact forces up to 100 foot-pounds.

6. Camera shall include all necessary mounting hardware and accessories for a fully supported installation.

2.07 ALLOWANCES

A. Contractor shall include allowances for equipment and/or other contract service reimbursements as required below in base bid lump sum amount(s). Equipment and/or contract services shall be provided and sourced at Owner's discretion and convenience with full cooperation by Contractor and paid for from successful bidder's contract in the amount(s) provided for herein. Any allowance amount proving to be excessive for the intended equipment and/or contract services shall be credited to the Owner against contract payment requests.

1. Allowance shall be made in the amount of $5,000.00 for contract services related to supply and installation of Owner directed infrastructure upgrades to support video monitoring system.

PART 3 - EXECUTION

3.01 PREPARATION

A. Contractor shall conduct detailed walk-through examination with Designer, Construction Manager and Owner verifying equipment and material locations as well as mounting and placement requirements prior to commencement of other installation activities.

B. Owner and Designer shall approve a written final installation plan prior to commencement of installation activity.

C. Contractor shall ensure all submittals and shop drawings have been provided to, and approval has been obtained from Designer prior to commencement of any final installation activities.

3.02 INSTALLATION

A. Contractor shall be familiar with the environment where work will be done as specified herein and make every reasonable effort to minimize interference with Owner's or other contractor's activities.

B. Work Areas shall be cleaned at the end of each day. All debris shall be cleared, removed, and disposed of in an approved container for the site. All equipment and tools shall be removed from common areas and stored in approved, secure storage locations. Any work that may impede the general use of the space and/or other contractor's work and cannot be removed shall be flagged and cordoned off by the Contractor prior to their departure.

C. All equipment and materials shall be installed in a neat and workmanlike manner. Best practices installation principles shall be used throughout the project.

D. Contractor shall be able to use the Owner's man lift when available. However, in situations where the provided lift is unavailable or unacceptable, Contractor shall be responsible for supplying a lift for camera installation and/or adjustment.

E. The Contractor shall furnish, set in place, and install all equipment necessary for a fully compliant and operational system as specified herein. The installation process includes, but is not limited to the following:

1. Inventory receipt of all components and equipment.

2. Storage of all equipment and components until such time those items are installed according to the specifications.

3. Transport equipment to the Owner's installation location(s).

4. Assemble, install, configure, and test all equipment and components, maintaining accurate inventory records and status documents and discarding packaging.

5. Collect all information necessary to accurately program all system devices to the Owner's intended use and need.

6. Label all system devices as may be appropriate and required by Owner and Designer.

7. Complete end user and system administrator training programs as specified herein.

8. Work shall be performed to meet local codes and industry standards including proper grounding and bonding of installed equipment.

9. Work includes extending Ethernet from installed equipment, as required, to Owner identified connection outlets at all locations.

    a. Work includes supply and connection of Ethernet patch cables. Cables for some cameras may be in air plenum spaces, above finished ceilings, or in other ways require special care and suitable tools to complete.

    b. Camera patch cables shall not exceed twenty (20) feet in length.

    c. Patch cables colors shall be coordinated with Owner.

    d. Network switch patch cables shall be provided and installed by Contractor. Existing work and material standards at the time of installation must be strictly followed.

F. Worksites include the following:

1. Delton Kellogg Elementary
   327 N. Grove Street
   Delton, Michigan 49046

G. It shall be the responsibility of the Contractor to repair or replace any damage done to the structure of finishes in the building by the Contractor. If in the course of work, Contractor damages, marks, or misplaces any surfaces or access plates/panels the Contractor shall repair and/or replace the surface, plate or panel to the original condition.

1. Final determination as to the damage condition and/or repair/replacement fitness of any surface, plate or panel shall be the sole responsibility of the Designer.

2. The building and work area shall be returned to its original condition prior to final sign off of the project.

H. Following installation and system “turn-up”, but prior to final acceptance of the system, Contractor shall conduct follow-up interviews with Owner identified administrators and staff to review system functionality, suitability and confirm feature and program fitness for Owner applications.

1. Follow-up interviews shall be fully documented by Contractor and submitted to Owner for approval.

3.03 TESTING

A. In an effort to ensure a smooth “turn-up” of the new system Contractor shall submit to a thorough testing process as defined herein prior to cut-over.

B. Prior to requesting testing by Designer, the Contractor shall use adequate means to assure the Work is completed in accordance with the specified requirements, meets the owner’s specific application requirements and is ready for functionality and integrity testing.

C. Testing Procedures

1. Prior to system “turn-up”, Contractor shall submit a written request to Designer indicating they have completed full and final configuration of the system and are ready to have system integrity and functionality tested.

2. Within reasonable time after receipt of request, Designer will provide a test schedule and coordinate testing date(s) with Owner and Contractor.

3. Should Designer determine the Work is not acceptably configured or not of adequate integrity:

a. Designer promptly will so notify Contractor, giving reasons therefore and providing sufficient details to allow Contractor to make corrective actions.

b. Contractor shall then expeditiously remedy the deficiencies and notify Designer in writing when ready for re-testing.

c. Designer will schedule re-test of the Work.

d. Excessive re-testing of Work may result in fees being assessed Contractor.

4. Should Designer and Owner concur the Work is configured properly, and system integrity is as required:

a. Designer will review Contractors detailed “turn-up” plan, and upon finding it acceptable issue a memorandum of Testing

Completion to Owner and Contractor after which system "turn-up" can proceed.

3.04 DOCUMENTATION

A. Contractor shall, throughout the completion of the project, provide Owner a file storage system that shall include all necessary equipment, including if reasonably required, file drawers, folders, dividers, etcetera, to contain all as-built drawings, owner's manuals of all equipment installed, warranty and maintenance information and other information the Contractor, Designer and/or Owner deem necessary. Documentation shall also be provided in a digital format in file formats and on media as specified by Owner and/or Designer.

B. Contractor shall be responsible for providing thorough, timely documentation on all hardware, software. Documentation shall include, but not be limited to:

1. Equipment description.
2. Equipment make.
3. Model number.
4. Software release.
5. Date installed.
6. Manufacturer's warranty.
7. Maintenance contract terms.
8. Verification of maintenance contract engagement.
9. Telephone numbers for service and support.
10. Detailed technical support and service procedure instructions.
11. All product (hardware and software) manuals and manufacturer supplied documentation, including, but not limited to owner manuals, system administrator manuals and configuration guides. Where number of duplicate copies for particular manual or documentation item could be reasonably considered excessive, Contractor shall request direction from Owner and Designer.
12. Photocopy of original invoice listing make and model for all components and equipment from individual manufacturer(s), distribution source(s), or authorized agent(s) to establish manufacturer

warranty start date for potential use after end of contract warranty provisions.

13. As-built drawings for each building with camera IP addresses and names.

14. System Configuration Report.

15. Complete inventory of installed hardware and system software. Hardware inventory shall include, but not be limited to, Camera version and type, IP address, Ethernet MAC address, camera serial number, physical installation location and software options.

3.05 TRAINING

A. Training shall be conducted at the Owner's discretion and at times and places convenient to Owner personnel. Prior to any training being conducted, Contractor shall provide Owner and Designer with detailed training syllabus and schedule for proposed training event. Compliant syllabus and schedule shall be provided at least ninety-six 96 hours in advance. Owner reserves the right to postpone training if syllabus and/or schedule submitted are deemed inadequate. Training shall not be conducted until such time a syllabus and schedule submitted by Contractor are found to be acceptable to Owner.

B. Contractor shall provide training for the Owner designated system administrator(s). Owner shall designate up to two (2) administrators to be trained. Training shall be a minimum of one (1), two (2) hour sessions in length, at the convenience of the Owner personnel, and of sufficient duration to satisfactorily complete training on all system administration functions including, but not limited to:

1. Basic trouble shooting of the installed system and components including diagnostic and problem resolution actions.

2. System back-up and restore functions and procedures for all system parameters and configurations.

3. Camera additions, moves, changes and reconfiguration.

4. Review of system alerts, logs and monitoring of configuration parameters including, but not limited to, camera configuration changes, video transmission changes and camera status.

C. Contractor shall provide Key Operator Training for Owner designated personnel. Owner shall identify up to five (5) persons for such training. Training shall be conducted for a minimum of two (2) hours at the convenience of Owner personnel, and of sufficient duration to satisfactorily

complete training on all system functions necessary, including, but not limited to:

1. Live camera monitoring
2. Review of archived video
3. Identification of archived video for removal of a copy
4. Extracting a time stamped copy of video from the system

3.06 SCHEDULE, MEETINGS AND PLANS

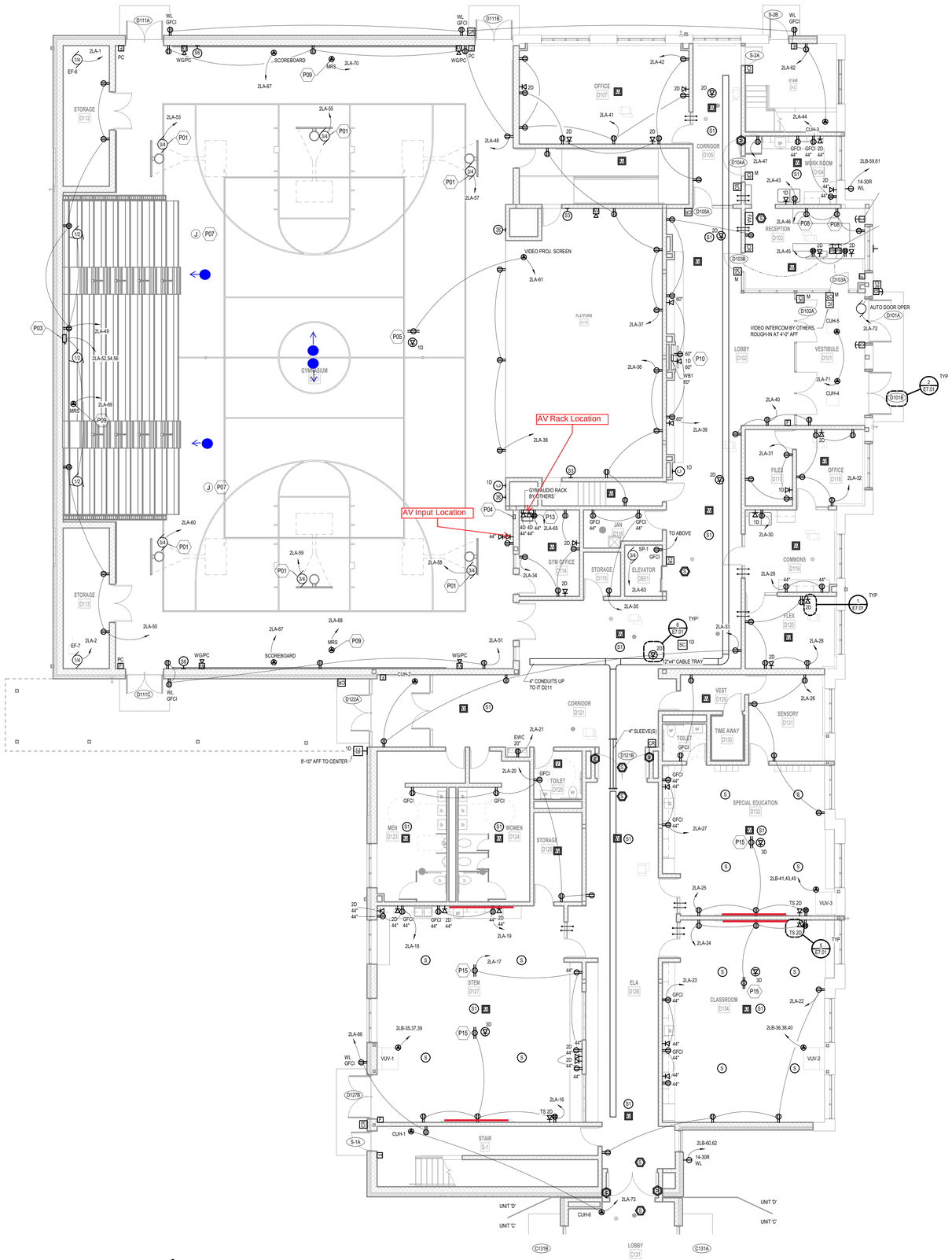
A. Planned sequence of operations shall be established by the Contractor within the guidelines established by the Owner, as required herein and as required to meet schedules.

B. All work shall be coordinated with Owner's construction manager on site.

C. Project progress meetings shall be held, but not limited to, weekly at a site and time identified as convenient for Owner and as required herein. Meetings will be attended as required herein.

END OF SECTION

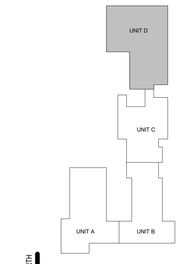
Appendix A - AV
Building Diagram



NORTH

UNIT 'D' FIRST FLOOR POWER & COMMUNICATIONS PLAN

1/8" = 1'-0"



NORTH

KEYPLAN

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ELEMENTARY NEW ADDITION & REMODELING

DELTON KELLOGG SCHOOLS

DELTON, MICHIGAN

UNIT 'D' FIRST FLOOR POWER & COMMUNICATIONS PLAN

E2.1D

BIM 360://5-4909 Delton Kellogg Elementary & Administration Addition and Remodeling/5-4909E 20191.rvt
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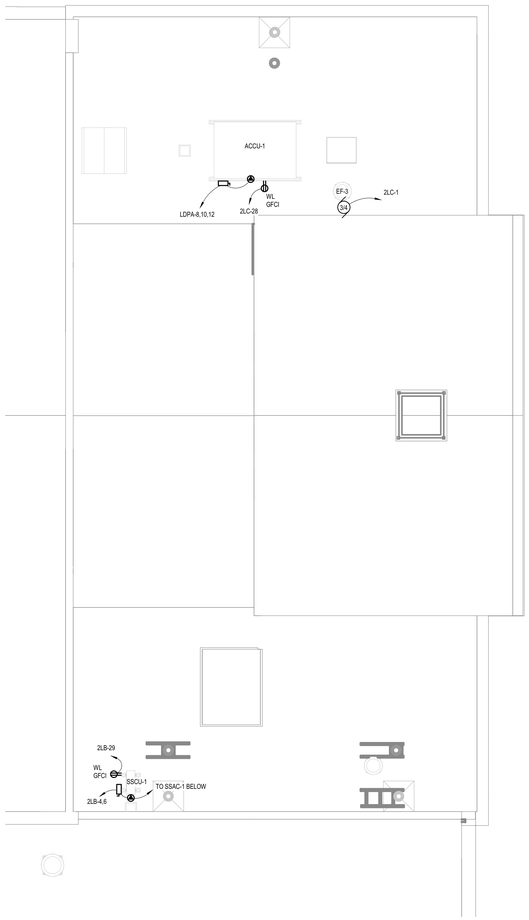
Appendix A - AV
Building Diagram

POWER & COMMUNICATION GENERAL NOTES

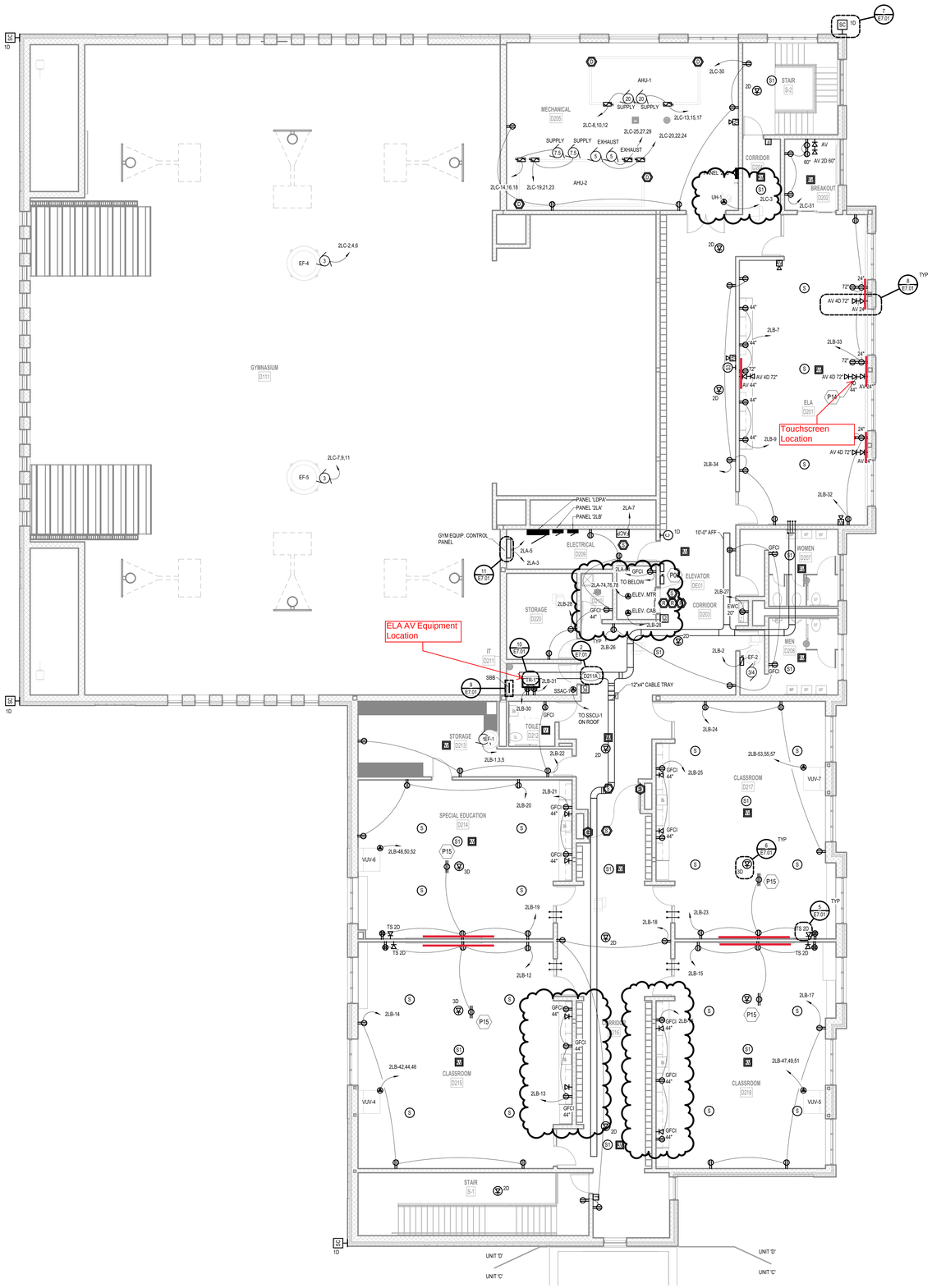
1. REFER TO ELECTRICAL GENERAL NOTES ON SHEET E0.01.
2. REFER TO CODE COMPLIANCE PLAN FOR LOCATIONS AND RATINGS OF VERTICAL AND HORIZONTAL BUILDING ASSEMBLIES. PROVIDE APPROPRIATE FIRESTOPPING SYSTEMS PER SPECIFICATIONS TO MEET ALL APPLICABLE CODES.
3. PROVIDE 120VAC POWER FOR ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS.
   A. REFER TO MECHANICAL/HVAC DRAWINGS FOR LOCATIONS AND QUANTITIES OF DAMPERS.
   B. CONNECT TO DEDICATED 20A BRANCH CIRCUIT (WITH BREAKER LOCK-ON ACCESSORY) IN LOCAL PANELBOARD FOR DAMPER(S) IN EACH AREA (DAMPERS MAY BE GROUPED ON EACH CIRCUIT).
   C. TERMINATE W/ BOX-COVER FUSIBLE DISCONNECT SWITCH AT EACH DAMPER.
   D. PROVIDE FIRE ALARM DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH DAMPER (UNLESS COVERED BY ANOTHER DUCT DETECTOR WITHIN 5 FEET).
   E. PROVIDE FIRE ALARM ADDRESSABLE RELAY(S) FOR INTERLOCKING DAMPER W/ CORRESPONDING HVAC UNIT(S) PER CODE REQUIREMENTS.
4. PROVIDE BOX-COVER FUSIBLE DISCONNECT SWITCH (ON BUILDING INTERIOR IN ACCESSIBLE LOCATION) FOR EACH SMALL (< 1/2 HP) MECHANICAL AND/OR PLUMBING EQUIPMENT MOTOR LOAD WHERE MORE THAN ONE UNIT IS CONNECTED TO A COMMON BRANCH CIRCUIT. TYPICAL EQUIPMENT TYPES INCLUDE BUT ARE NOT LIMITED TO CABINET HEATERS, DAMPERS, EXHAUST FANS, FAN COIL UNITS, PUMPS, UNIT HEATERS, VAV BOXES, ETC.
5. DESIGNATED CABLING PATHWAYS (CONDUITS, CABLE TRAYS, PENETRATION SLEEVES, ETC.) SHALL BE RESERVED FOR DIV. 27 COMMUNICATIONS CABLING AND DIV. 28 SAFETY/SECURITY CABLING ONLY. OTHER CABLING TYPES, SUCH AS DIV. 23 CONTROLS, DIV. 26 CONTROLS, AND ARCHITECTURAL EQUIPMENT CABLING SHALL BE SUPPORTED AND SLEEVED BY OTHER INDEPENDENT PATHWAYS, HANGERS, AND SUPPORTS.
6. CONSOLIDATE ALL POWER SUPPLIES REQUIRED FOR ELECTRONIC DOOR HARDWARE (REF. SECTION 08 71 00) TO CENTRAL LOCATION(S) ADJACENT TO DESIGNATED ACCESS CONTROL EQUIPMENT LOCATION(S). CONNECT ALL POWER SUPPLIES TO DEDICATED LOCAL BRANCH CIRCUIT(S) AS DESIGNATED.

ELECTRICAL KEYNOTES

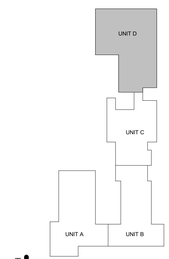
P06	INSTALL ELEVATOR DISCONNECTS IN RECESSED ENCLOSURE. MINIMUM INTERIOR DIMENSIONS 30"H X 24"W X 8"D. PROVIDE FLUSH MOUNT (FLANGED) FRONT FRAME, REMOVABLE DOOR WITH CONCEALED HINGE, QUARTER-TURN LATCH, FLUSH OR LOW-PROFILE CYLINDER KEY LOCK, NVENT/HOFFMAN CONCEPT SERIES CAT. NO. "CFM3024S" WITH OPTIONS, OR APPROVED EQUIVALENT. COORDINATE FACTORY OR FIELD FINISHING TO MATCH WALL. MOUNT BOTTOM OF ENCLOSURE AT 36" AFF.
P14	PROVIDE 4 11/16" X EXTRA DEEP BOX WITH DOUBLE-GANG RING FOR TOUCHSCREEN BY OWNER'S TECHNOLOGY CONSULTANT. CONNECT TO 1 1/4" CONDUITS FOR AV CABLING PER DETAIL.
P15	COORDINATE EXACT LOCATION OF CEILING RECEPTACLE FOR PROJECTOR WITH OWNER'S TECHNOLOGY CONSULTANT PRIOR TO INSTALLATION.



PARTIAL ROOFTOP POWER PLAN
1/8" = 1'-0"



UNIT 'D' SECOND FLOOR POWER & COMMUNICATIONS PLAN
1/8" = 1'-0"



KEYPLAN

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ELEMENTARY NEW ADDITION & REMODELING
DELTON KELLOGG SCHOOLS
DELTON, MICHIGAN

ISSUANCES
12.07.2021 BIDS & CONSTRUCTION
01.21.2022 ADDENDUM 002
03.16.2022 BULLETIN 002

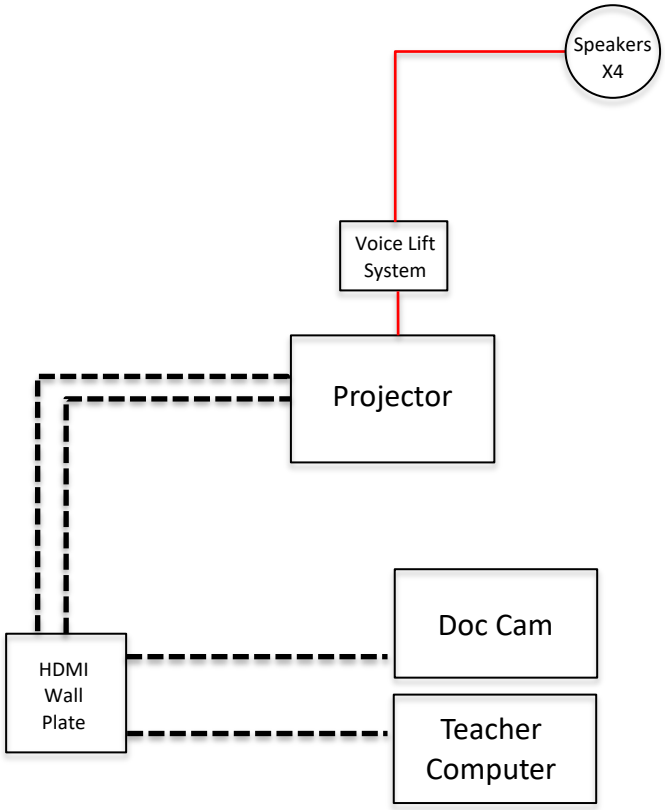
DRAWN JFB
REVIEWED PRH
PROJECT NO. 5-4909

UNIT 'D' SECOND FLOOR POWER & COMMUNICATIONS PLAN

E2.2D

Appendix B - Equipment List						
Room Number	Standard Projector	8' Projector Screen	Document Camera	Speakers	Voice Amplification	Notes
D102 - Lobby	0	0	0	0	0	
D111 - Gymnasium	0	0	0	0	0	See Special Condition Locations C
D127 - STEM	0	0	0	0	0	See Special Condition Locations B
D132 - SPED	1	1	1	1	4	
D134	1	1	1	1	4	
D201 - ELA	0	0	0	0	0	See Special Condition Location A
D202 - Breakout	0	0	0	0	0	
D214	1	1	1	1	4	
D215	1	1	1	1	4	
D217	1	1	1	1	4	
D218	1	1	1	1	4	
	6	**6**	**6**	**6**	**24**	

Appendix C - Classroom Multimedia System Connection Line Diagram

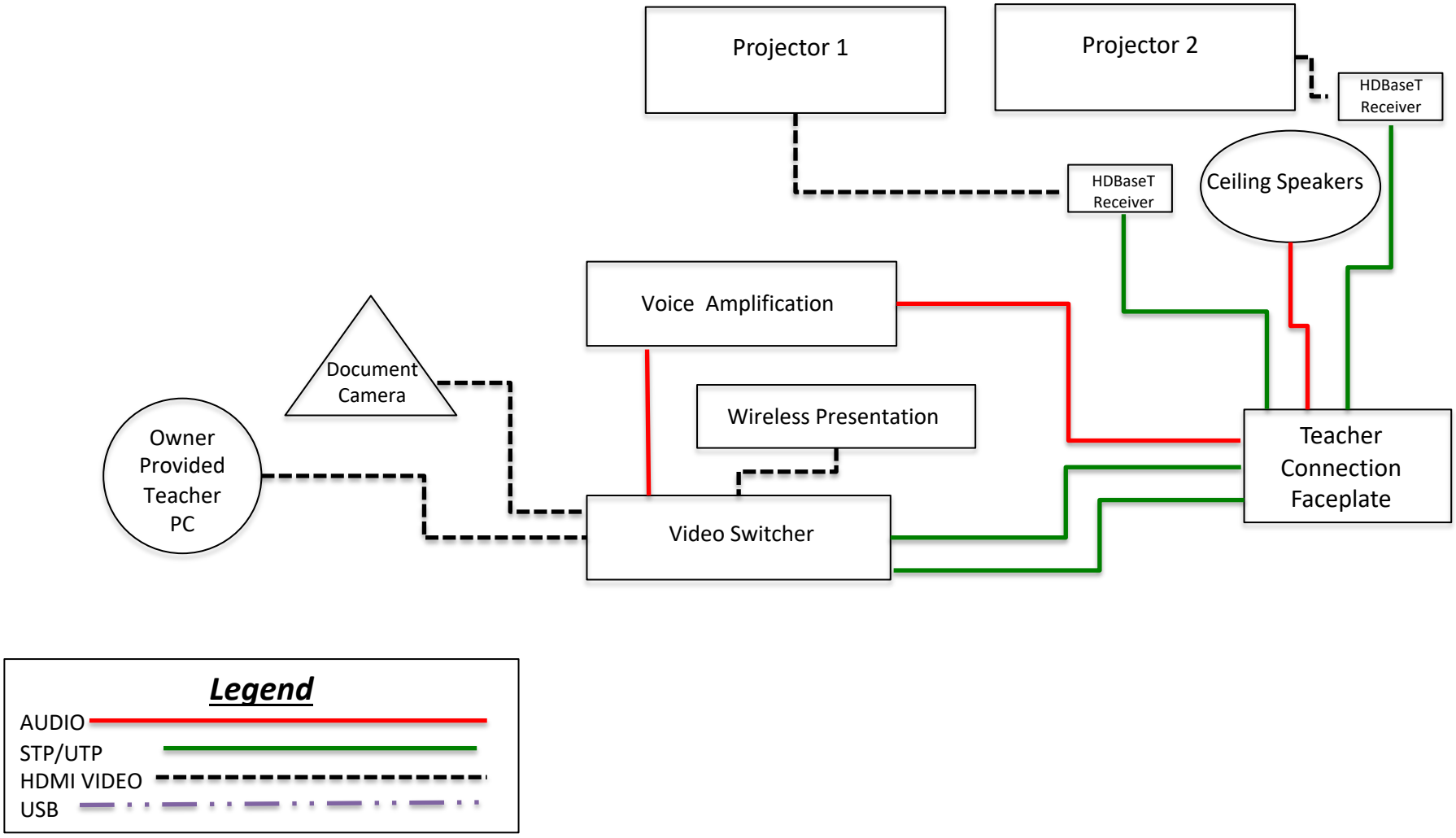


Legend

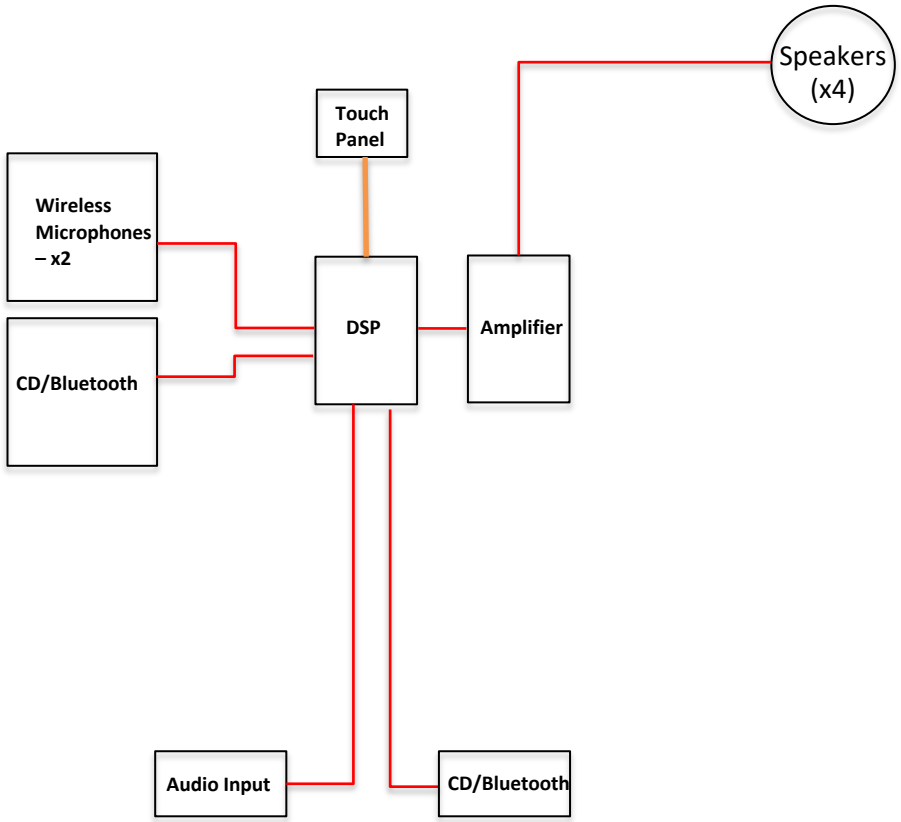
HDMI

Audio

Appendix C – STEM Room Line Diagram - Matrix

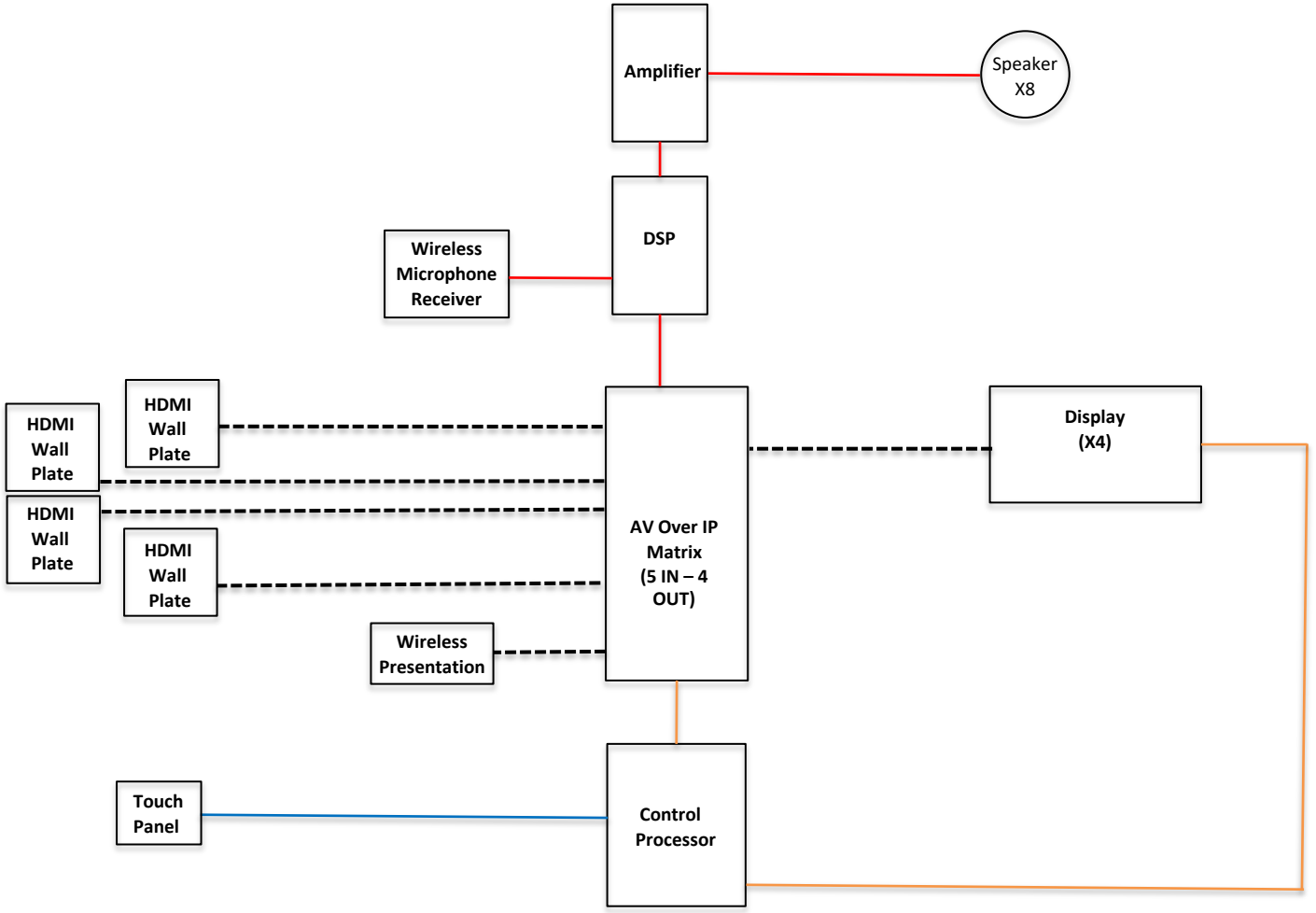


Appendix C - DKS Gymnasium Connection Line Diagram



Legend Audio Control

Appendix C - ELA Connection Line Diagram



Legend Cat6 Cable — Audio — HDMI - - - - Control —

SECTION 08 71 00 – DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Scope of Work: This Section describes all finish hardware required to complete the work as indicated on the Drawings and specified herein. Provide all trim attachments and fastening specified or required for proper and complete installation.

B. Related Sections:

1. Section 08 11 13: Hollow Metal Doors and Frames
2. Section 08 14 16: Flush Wood Doors
3. Section 08 41 23: Aluminum Framed Entrances and Storefronts

1.2 SUBMITTALS

A. Product Data, Shop Drawings, Samples:

1. General: Comply with the provisions of Section 01 33 00.
2. Product Data: Within 15 calendar days after award of the Contract, submit:
   a. Complete materials list of all items proposed to be furnished and delivered under this Section.
      1) Identify each hardware item by manufacturer, the manufacturer's catalog number, and the location of the item in the work.
      2) Make the list in form suitable for ready checking by the Architect.
   b. Manufacturer's specifications, catalog cuts, and other data required to demonstrate compliance with specified requirements.

   Approval of the hardware list by the Architect/Engineer shall not relieve the Contractor from the responsibility for furnishing all required finish hardware.
3. Samples: Within 15 calendar days after being so requested by the Architect/Engineer, deliver to the Architect/Engineer samples of each finish hardware item.
4. Templates: In a timely manner to ensure orderly progress of the work, deliver templates or physical samples of the approved finish hardware items to pertinent manufacturers of interfacing items such as door and frame.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Qualifications of Manufacturers: Products used in the work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
2. Qualification of Suppliers: The supplier shall have a qualified representative readily available to the Architect/Engineer, and/or Owner on short notice for consultation and service during the execution of this work and the warranty period.
3. Qualification of Installers: Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of this Section.

B. Regulatory Requirements & References: Fire Rated Openings: Comply with the requirements of Underwriter's Laboratories, Inc.

C. Pre-Installation Conference: Prior to the installation of hardware, manufacturer's representatives for locksets, closers, and exit devices shall arrange and hold a jobsite meeting to instruct the installing contractor's personnel on the proper installation of their respective products. A letter of compliance, indicating when this meeting is held and who is in attendance, shall be sent to the Architect and Owner.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Individually package each units of finish hardware, complete with proper fastening and appurtenances, clearly marked on the outside to indicate the contents and specific locations in the work.

B. Protection: Use all means necessary to protect materials of this Section before, during, and after delivery to the job site and to protect the work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/Engineer and at no additional cost to the owner.

D. Deliveries:

1. Stockpile all items sufficiently in advance to ensure their availability and make all necessary deliveries in a timely manner to ensure orderly progress of the total work.
2. All hardware shall be delivered to a destination as directed by the Construction Manager with sufficient time in advance for proper inspection in order not to delay the scheduled completion date.
3. The General Contractor / Construction Manager shall provide a lockable room with ample shelving for the storage of hardware. Upon receipt of the hardware, the Finish Hardware supplier shall unpack and place on the shelves all hardware in order of item and/or door numbers.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate all work with job site superintendent and all applicable trades.

1.6 WARRANTY

A. Provide a written warranty in approved form in compliance with the related requirements of the General Conditions, covering all Finish Hardware furnished under this Section against defects in manufacturing and workmanship for a minimum of two (2) years from the final acceptance of the building.

B. Any material failing to comply with the above guarantee shall be removed and replaced with satisfactory material at the Finish Hardware supplier's expense, including the necessary labor for removing and replacing.

C. During the Warranty Period, the Finish Hardware supplier shall, upon request, make prompt adjustments, repairs or replacements as required to any hardware installed under this contract, other than normal maintenance service.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Product	Specified	Acceptable Alternates
Continuous Hinges	Ives	Select, Pemko
Hinges	Ives	Hager, McKinney
Flush Bolts	Ives	Rockwood, Trimco
Coordinators	Ives	Rockwood, Trimco
Power Transfers	Von Duprin EPT10	Securitron CEPT-10
Locks (Mortise)	Schlage L Series (06B)	Sargent 8200 Series
Locks (Cylindrical)	Schlage ND Series (RHO)	Sargent 11-Line Series
Exit Devices	Von Duprin 98/35A Series	Sargent 19-43-80 Series
Electric Strikes	Von Duprin 6000 Series	HES 1006 Series
Cylinders and Keys	Sargent (6275-RJ Keyway)	Existing Key System

Door Closers	LCN 4010/4110 Series	Sargent 281 Series
Auto Operators	LCN 4600 Series	Norton 6000 Series
Push/Pull and Kick Plates	Ives	Rockwood, Trimco
Stops	Ives	Rockwood, Trimco
Overhead Stops	Glynn Johnson	Rixson
Thresholds & Weatherstrip	Zero	NGP, Pemko
Power Supplies	Von Duprin PS Series	Securitron BPS Series
Magnetic Hold-Opens	LCN SEM Series	Rixson

2.2 MATERIALS

A. General:

1. Proprietary Products: References to specific proprietary products are used to establish minimum standards of utility and quality. Unless otherwise approved by the Architect/Engineer, provide only the specific products. Design is based on the materials specified. Other materials may be considered by the Architect/Engineer in accordance with the provisions of Section 01 33 00.
2. Fasteners:
   a. Furnish all finish hardware with all necessary screws, bolts, and other fasteners of suitable size and type to anchor the hardware in position for long life under hard use.
   b. Furnish fastenings where necessary with expansion shields, toggle bolts, sex bolts, and other anchors approved by the Architect/Engineer, according to the materials to which the hardware is to be applied and the recommendations of the hardware manufacturer.
   c. All fastenings shall harmonize with the hardware as to materials and finish.
3. Finishes of all hardware shall match the finish of the locksets. Take special care to coordinate all of the various manufactured items furnished under this Section, to ensure acceptably uniform finish.
4. Install closers and door holders in hollow metal and wood doors with through bolts or sex-bolts.

B. Keying: All cylinders/cores and keying to be purchased from **S.A. Morman, Portage, MI** and included in base bid. Supply 3 keys per lock, 6 master keys for each master key group and 3 grand master keys. Conduct keying meeting with Owner to determine keying requirements.

C. Tools and Manuals: With the delivery of permanent keys, deliver to the Owner one complete set of adjustment tools and one set of maintenance manuals for locksets, latchsets, closers, and panic devices.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install the materials in strict accordance with the manufacturer's recommendations and schedules.

B. All doors should swing as far as conditions allow. When mounting door closers, use the mounting that allows doors to swing to the wall or floor bumper. Do not stop the door with the closer arm unless the arm is designed specifically to stop the door. when mounting closers designed with arms to stop the door or overhead door stops, always mount them to allow the door to swing as far as conditions will permit.

C. Anchor all screws with Loc-Tite to assure permanence of attachment.

D. All doors and hardware to be left in proper working order and cleaned.

E. Special Hardware Instructions:

1. Wall stops WS33 are to be mounted on the wall up at the top of the door and as far out on the latch edge as conditions allow. The sloped side is to face up, preventing anyone or anything to hang on them.
2. Wall stop & holds WH45 are to be mounted the same as the WS33.

3.2 ADJUSTING AND CLEANING

A. Final inspections shall be made by the Architect and Finish Hardware Supplier. They shall report any installation adjustments that are to be made to have all hardware in perfect working order. The Finish Hardware Supplier shall verify the keying to the Architect to insure proper location of locksets and cylinders. All closers shall be checked and adjusted for closing.

B. Prior to final acceptance of the installation, the Finish Hardware Supplier shall make a final inspection to verify that all corrections have been made and that all hardware items are in good working condition.

PART 4 - HARDWARE SCHEDULE

Hardware Group No. 01

For use on Door #(s):

D130A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	TIME OUT LOCK	683X (AS REQ'D)			626	ABH
1	EA	OH STOP	100S			630	GLY
1	EA	GASKETING	870AA-S			AA	ZER
1	EA	DOOR BOTTOM	369AA-Z49			AA	ZER

Hardware Group No. 02

For use on Door #(s):

D109A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	PASSAGE SET	ND10S RHO			626	SCH
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP/HOLDER	WS45(X)			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 03

For use on Door #(s):

D108B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	PASSAGE SET	ND10S RHO			626	SCH
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/HOLDER	WS45(X)			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 04

For use on Door #(s):

D133A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CORRIDOR LOCK	L9456L 06B 09-544 L283-722			626	SCH
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	WALL STOP	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 05

For use on Door #(s):

D125A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CORRIDOR LOCK	L9456L 06B 09-544 L283-722			626	SCH
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 06

For use on Door #(s):

D212A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	CORRIDOR LOCK	L9456L 06B 09-544 L283-722			626	SCH
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
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	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 07

For use on Door #(s):

D107A	D118A	D120A			

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CLASSROOM LOCK	ND70LSARD RHO			626	SCH

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	WALL STOP	WS406/407CCV			630	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 08

For use on Door #(s):

D207A	D208A				

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CLASSROOM LOCK	ND70LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 09

For use on Door #(s):

D108A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CLASSROOM LOCK	ND70LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP/HOLDER	WS45(X)			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 10

For use on Door #(s):

D114A	D123A	D124A			

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CLASSROOM LOCK	ND70LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 11

For use on Door #(s):

D131A	D131B				

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CLASSROOM SECURITY	ND75LSARD RHO XN12-035			626	SCH
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	WALL STOP	WS406/407CCV			630	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 12

For use on Door #(s):

D201B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	CLASSROOM SECURITY	ND75LSARD RHO XN12-035			626	SCH
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP/HOLDER	WS45(X)			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 13

For use on Door #(s):

D132A	D134A	D201A	D214A	D218A	

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	CLASSROOM SECURITY	ND75LSARD RHO XN12-035			626	SCH
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
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/HOLDER	WS45(X)			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 14

For use on Door #(s):

D129A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	CLASSROOM SECURITY	ND75LSARD RHO XN12-035			626	SCH

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
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	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 15

For use on Door #(s):

D119A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	CLASSROOM SECURITY	ND75LSARD RHO XN12-035			626	SCH
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4111 SCUSH			689	LCN
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 16

For use on Door #(s):

D117A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 17

For use on Door #(s):

D115A	D116A	D126A	D209A	D210A	D213A
D220A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 18

For use on Door #(s):

D213B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4011 ST-1544			689	LCN
1	EA	MOUNTING PLATE	4020-18			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 19

For use on Door #(s):

D109B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	SURFACE CLOSER	4111 SCUSH			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 20

For use on Door #(s):

D112A	D113A	D205A			

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	SET	AUTO FLUSH BOLT	FB31P/FB41P (AS REQ'D)			630	IVE
1	EA	DUST PROOF STRIKE	DP2			626	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	COORDINATOR	COR X FL			628	IVE
2	EA	MOUNTING BRACKET	MB			689	IVE
2	EA	SURFACE CLOSER	4111 SCUSH			689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS			630	IVE
1	EA	GASKETING	488S			BK	ZER
1	EA	MEETING STILE	8217S			BK	ZER

Hardware Group No. 21

For use on Door #(s):

D105A	D211A				

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	ELECTRIC STRIKE	6400 FSE			630	VON
1	EA	SURFACE CLOSER	4011			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER OR ACTIVATION OF THE FIRE ALARM. FREE EGRESS AT ALL TIMES.

Hardware Group No. 22

For use on Door #(s):

D103A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5			652	IVE
1	EA	STOREROOM LOCK	ND80LSARD RHO			626	SCH
1	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	ELECTRIC STRIKE	6400 FSE			630	VON
1	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4011 ST-1544			689	LCN
1	EA	MOUNTING PLATE	4020-18			689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS			630	IVE
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	INTERCOM SYSTEM	PROVIDED BY SECURITY CONTRACTOR				
			RATED SEALS BY DOOR/FRAME MANUFACTURER				

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES. DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER OR INTERCOM SYSTEM WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER, ACTIVATION OF THE FIRE ALARM SYSTEM, OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.							

Hardware Group No. 23

For use on Door #(s):

D104A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	INSTITUTION LOCK	ND82LSARD RHO			626	SCH
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	ELECTRIC STRIKE	6400 FSE			630	VON
1	EA	SURFACE CLOSER	4111 EDA			689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS			630	IVE
1	EA	FIRE/LIFE WALL MAG	SEM7850 (COORDINATE VOLTAGE AS REQ'D)			689	LCN
3	EA	SILENCER	SR64			GRY	IVE
2	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES. ALL WIRING AND CONDUIT BY ELECTRICAL CONTRACTOR. COORDINATE ALL WIRING AND INSTALLATION WITH ELECTRICAL AND SECURITY CONTRACTORS. DOOR NORMALLY HELD OPEN BY MAGNETIC HOLD OPEN. MAGNETIC HOLD OPEN IS WIRED TO THE LOCKDOWN SYSTEM. WHEN SYSTEM IS ACTIVATED, THE MAGNET RELEASES, AND THE DOOR CLOSES AND LOCKS. DOOR CAN ALSO BE MANUALLY RELEASED FROM THE MAGNET. WHEN DOOR IS CLOSED AND LOCKED, PRESENTING A VALID CREDENTIAL TO EITHER READER WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER OR ACTIVATION OF LOCKDOWN SYSTEM.							

Hardware Group No. 24

For use on Door #(s):

D103B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	INSTITUTION LOCK	ND82LSARD RHO			626	SCH

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	KEY-IN-LEVER CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	ELECTRIC STRIKE	6400 FSE			630	VON
1	EA	SURFACE CLOSER	4111 SCUSH			689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 (AS REQ'D)			689	LCN
1	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS			630	IVE
2	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	PUSH BUTTON	621GR NS			626	SCE
1	EA	DESK MOUNT BUTTON	660-PB			628	SCE
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			RATED SEALS BY DOOR/FRAME MANUFACTURER				

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

UNLOCKED HOURS: DOOR NORMALLY CLOSED AND LOCKED AND PUSH BUTTON ON SCHOOL CORRIDOR SIDE SHALL BE ENABLED BY ACCESS CONTROL SYSTEM. PRESSING PUSH BUTTON ON SCHOOL CORRIDOR SIDE WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS FROM SCHOOL CORRIDOR INTO OFFICE. OFFICE SIDE ALWAYS LOCKED PREVENTING FREE PASSAGE FROM OFFICE INTO THE SCHOOL. PRESENTING A VALID CREDENTIAL TO THE READER ON SCHOOL OFFICE SIDE, OR PRESSING DESK MOUNT BUTTON AT RECEPTION DESK, WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS FROM OFFICE INTO SCHOOL. DOOR TO REMAIN LOCKED UPON LOSS OF POWER, ACTIVATION OF THE FIRE ALARM SYSTEM, OR ACTIVATION OF LOCKDOWN SYSTEM.

LOCKED HOURS: DOOR NORMALLY CLOSED AND LOCKED AND PUSH BUTTON ON SCHOOL CORRIDOR SIDE SHALL BE DISABLED BY ACCESS CONTROL SYSTEM. THUS LOCKED IN BOTH DIRECTIONS. PRESENTING A VALID CREDENTIAL TO THE READER ON EITHER SIDE OR PRESSING DESK MOUNT BUTTON AT RECEPTION DESK, WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER, ACTIVATION OF THE FIRE ALARM SYSTEM, OR ACTIVATION OF LOCKDOWN SYSTEM.

Hardware Group No. 25

For use on Door #(s):

D121A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	224HD			628	IVE
2	EA	DUMMY PUSH BAR	350			626	VON
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP	100S			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	KICK PLATE	8400 8" X 1" LDW B-CS			630	IVE
2	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 26

For use on Door #(s):

D127A	D215A	D215B	D217A	D217B	

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP			652	IVE
1	EA	PANIC HARDWARE	CDSI-98-L-NL-06			626	VON
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
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/HOLDER	WS45(X)			626	IVE
3	EA	SILENCER	SR64			GRY	IVE

Hardware Group No. 27

For use on Door #(s):

S-1B	S-1C	S-2C			

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	224HD			628	IVE
1	EA	FIRE EXIT HARDWARE	98-L-BE-F-06			626	VON
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	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER

Hardware Group No. 28

For use on Door #(s):

D111D					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	224HD			628	IVE
2	EA	FIRE EXIT HARDWARE	9827-L-F-LBR-06-499F			626	VON
2	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	OH STOP	100S			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS			630	IVE
1	EA	WALL STOP	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER
1	EA	MEETING STILE	8217S			BK	ZER

Hardware Group No. 29

For use on Door #(s):

D216A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	224HD			628	IVE
2	EA	FIRE EXIT HARDWARE	9827-EO-F-LBR			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 MAG	SEM7850 (COORDINATE VOLTAGE AS REQ'D)		✓	689	LCN
1	EA	GASKETING	488S			BK	ZER
1	EA	ASTRAGAL	PROVIDED BY DOOR SUPPLIER				

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

THE WALL MAGNETS SHALL BE WIRED TO THE FIRE ALARM PANEL THROUGH A SET OF NORMALLY-CLOSED, DRY CONTACTS (SUPPLIED BY THE FIRE ALARM CONTRACTOR) AND LOCKDOWN SYSTEM.

DOORS NORMALLY HELD OPEN BY MAGNETIC HOLD OPENS. MAGNETIC HOLD OPENS ARE WIRED TO THE FIRE ALARM AND LOCKDOWN SYSTEM. WHEN SYSTEM IS ACTIVATED, THE MAGNETS RELEASE, AND THE DOORS CLOSE AND LOCK. DOORS CAN ALSO BE MANUALLY RELEASED FROM THE MAGNET.

Hardware Group No. 30

For use on Door #(s):

S-2A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	224HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON		✓	689	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-L-NL-06-CON		✓	626	VON
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
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	WS406/407CCV			630	IVE
1	EA	GASKETING	488S			BK	ZER
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)		✓		SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY		✓		SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR		✓		

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	POWER SUPPLY	PS902 900-2RS-FA - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES. DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER OR ACTIVATION OF THE FIRE ALARM. FREE EGRESS AT ALL TIMES.							

Hardware Group No. 31

For use on Door #(s):

D121B	D128A				

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	224HD			628	IVE
1	EA	CONT. HINGE	224HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	FIRE EXIT HARDWARE	9827-L-DT-F-LBR-06-499F			626	VON
1	EA	ELEC FIRE EXIT HARDWARE	QEL-9827-L-NL-F-LBR-06-499F-CON			626	VON
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
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 MAG	SEM7850 (COORDINATE VOLTAGE AS REQ'D)			689	LCN
1	EA	GASKETING	488S			BK	ZER
1	EA	MEETING STILE	8217S			BK	ZER
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS-FA - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES. THE WALL MAGNETS SHALL BE WIRED TO THE FIRE ALARM PANEL THROUGH A SET OF NORMALLY-CLOSED, DRY CONTACTS (SUPPLIED BY THE FIRE ALARM CONTRACTOR) AND LOCKDOWN SYSTEM. DOORS NORMALLY HELD OPEN BY MAGNETIC HOLD OPENS. MAGNETIC HOLD OPENS ARE WIRED TO THE FIRE ALARM AND LOCKDOWN SYSTEM. WHEN SYSTEM IS ACTIVATED, THE MAGNETS RELEASE, AND THE DOORS CLOSE AND LOCK. DOORS CAN ALSO BE MANUALLY RELEASED FROM THE MAGNET. WHEN DOORS ARE CLOSED AND LOCKED, PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS. DOOR TO REMAIN LOCKED WITH LOSS OF POWER, ACTIVATION OF THE FIRE ALARM SYSTEM, OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.							

Hardware Group No. 32

For use on Door #(s):

D102B	D102C	D102D			

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	224HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-EO-CON			626	VON
1	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
1	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4111 EDA			689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS			630	IVE
3	EA	SILENCER	SR64			GRY	IVE
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES. UNLOCKED HOURS: DOOR ELECTRONICALLY DOGGED DOWN VIA ACCESS CONTROL SYSTEM, THUS IN PUSH/PULL MODE. LOCKED HOURS: DOOR NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. DOOR TO REMAIN LOCKED WITH LOSS OF POWER OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.							

Hardware Group No. 33

For use on Door #(s):

D102A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	224HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-NL-OP-110MD-CON			626	VON
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
1	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4111 EDA			689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS			630	IVE
3	EA	SILENCER	SR64			GRY	IVE
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

UNLOCKED HOURS: DOOR ELECTRONICALLY DOGGED DOWN VIA ACCESS CONTROL SYSTEM, THUS IN PUSH/PULL MODE.

LOCKED HOURS: DOOR NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS.

DOOR TO REMAIN LOCKED WITH LOSS OF POWER OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.

Hardware Group No. 34

For use on Door #(s):

D101B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	112HD EPT			628	IVE
2	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB			689	VON
2	EA	ELEC PANIC HARDWARE	QEL-98-EO-CON			626	VON
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP	100S			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	MULLION SEAL	8780N			BK	ZER
2	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER
2	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
2	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

UNLOCKED HOURS: DOORS ELECTRONICALLY DOGGED DOWN VIA ACCESS CONTROL SYSTEM, THUS IN PUSH/PULL MODE.

LOCKED HOURS: DOORS NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM.

DOORS TO REMAIN LOCKED WITH LOSS OF POWER OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.

Hardware Group No. 35

For use on Door #(s):

D111B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	112HD			628	IVE
1	EA	CONT. HINGE	112HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB			689	VON
1	EA	PANIC HARDWARE	98-EO			626	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-EO-CON			626	VON
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP & HOLDER	100H			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	MULLION SEAL	8780N			BK	ZER
2	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

DOORS NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS. DOORS TO REMAIN LOCKED WITH LOSS OF POWER OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.

Hardware Group No. 36

For use on Door #(s):

C131A	C131B	D127B			

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	112HD			628	IVE
1	EA	CONT. HINGE	112HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB			689	VON
1	EA	PANIC HARDWARE	98-EO			626	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-NL-OP-110MD-CON			626	VON
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP	100S			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	MULLION SEAL	8780N			BK	ZER
2	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

DOORS NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS. DOORS TO REMAIN LOCKED WITH LOSS OF POWER. FREE EGRESS AT ALL TIMES.

Hardware Group No. 37

For use on Door #(s):

D101A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	112HD EPT			628	IVE
2	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	REMOVABLE MULLION	4954 STAB			689	VON
1	EA	ELEC PANIC HARDWARE	LX-QEL-98-EO-CON - LHR			626	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-NL-OP-110MD-CON			626	VON
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4111 EDA			689	LCN
1	EA	SURF. AUTO OPERATOR	4642 WMS - LHR			689	LCN
1	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	WEATHER RING	8310-801			PLA	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-853T			630	LCN
2	EA	FLUSH WALL MOUNT BOX	8310-867F			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	MULLION SEAL	8780N			BK	ZER
2	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
2	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-4RL - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

UNLOCKED HOURS: DOORS ELECTRONICALLY DOGGED DOWN VIA ACCESS CONTROL SYSTEM, THUS IN PUSH/PULL MODE. PUSHING EITHER AUTO OPERATOR ACTUATOR WILL SIGNAL AUTO OPERATOR TO MOMENTARILY OPEN THE LHR LEAF.

LOCKED HOURS: DOORS NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH (ALLOWING ACCESS) FOR THE RHRA LEAF AND ACTIVATE EXTERIOR AUTO OPERATOR ACTUATOR. PUSHING EXTERIOR AUTO OPERATOR ACTUATOR AT THIS TIME WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH FOR THE LHR LEAF AND SIGNAL AUTO OPERATOR TO MOMENTARILY OPEN THE LHR LEAF. PUSH INTERIOR ACTUATOR AT ANY TIME WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH FOR THE LHR LEAF AND SIGNAL AUTO OPERATOR TO MOMENTARILY OPEN THE LHR LEAF.

DOORS TO REMAIN LOCKED WITH LOSS OF POWER OR ACTIVATION OF LOCKDOWN SYSTEM. FREE EGRESS AT ALL TIMES.

Hardware Group No. 38

For use on Door #(s):

S-2B					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	112HD EPT			628	IVE
1	EA	POWER TRANSFER	EPT10 CON			689	VON
1	EA	ELEC PANIC HARDWARE	QEL-98-NL-OP-110MD-CON			626	VON
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
1	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4111 EDA			689	LCN
1	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH
1	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				
OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES. DOOR NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS. DOOR TO REMAIN LOCKED WITH LOSS OF POWER. FREE EGRESS AT ALL TIMES.							

Hardware Group No. 39

For use on Door #(s):

D122A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2		PIVOT	WELD ON PIVOTS PROVIDED BY TGP				
2	EA	POWER TRANSFER	EPTL			689	SEC
1	EA	MULLION	FIXED MULLION				
1	EA	ELEC FIRE EXIT HARDWARE	QEL-98-EO-F-CON			626	VON
1	EA	ELEC FIRE EXIT HARDWARE	QEL-98-NL-OP-F-110MD-CON			626	VON
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP	100S			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	KICK PLATE	8400 8" X 2" LDW B-CS			630	IVE
1	EA	RAIN DRIP	142AA			AA	ZER
2	EA	DOOR SWEEP	PROVIDED BY TGP				
1	EA	THRESHOLD	566A			A	ZER
2	EA	WIRE HARNESS	CON-XX/XXP (AS REQ'D) - ELECTRIFIED HARDWARE TO POWER TRANSFER (EVALUATE CONDITIONS AND MODIFY WIRE LENGTH AS REQ'D)				SCH

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	WIRE HARNESS	CON-6W - WIRE EXTENSION FROM POWER TRANSFER TO POWER SUPPLY				SCH
1	EA	CARD READER	PROVIDED BY SECURITY CONTRACTOR				
1	EA	POWER SUPPLY	PS902 900-2RS-FA - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER				VON
			FIRE RATED SEALS PROVIDED BY TGP				

NOTES:
1) VERIFY HARDWARE COMPATIBILITY WITH TGP FOR FIRE RATED ASSEMBLY PRIOR TO ORDERING.

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

UNLOCKED HOURS: DOORS ELECTRONICALLY DOGGED DOWN VIA ACCESS CONTROL SYSTEM, THUS IN PUSH/PULL MODE.

LOCKED HOURS: DOORS NORMALLY CLOSED AND LOCKED VIA ACCESS CONTROL SYSTEM. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS.

DOORS TO REMAIN LOCKED WITH LOSS OF POWER, ACTIVATION OF LOCKDOWN SYSTEM, OR ACTIVATION OF THE FIRE ALARM SYSTEM. FREE EGRESS AT ALL TIMES.

Hardware Group No. 40

For use on Door #(s):

D111A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	112HD			628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB			689	VON
2	EA	PANIC HARDWARE	98-EO			626	VON
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP & HOLDER	100H			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	MULLION SEAL	8780N			BK	ZER
2	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

Hardware Group No. 41

For use on Door #(s):

D111C					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	112HD			628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB			689	VON
1	EA	PANIC HARDWARE	98-EO			626	VON
1	EA	PANIC HARDWARE	98-NL-OP-110MD			626	VON
1	EA	MORTISE CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
1	EA	RIM CYLINDER	KEYED TO EXISTING KEY SYSTEM - SEE SECTION 2.2.B			626	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O			630-316	IVE
2	EA	OH STOP & HOLDER	100H			630	GLY
2	EA	SURFACE CLOSER	4111 EDA			689	LCN
2	EA	BLADE STOP SPACER	4110-61 (AS REQ'D)			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	MULLION SEAL	8780N			BK	ZER
2	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

Hardware Group No. 42

For use on Door #(s):

S-1A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	CONT. HINGE	112HD			628	IVE
1	EA	PANIC HARDWARE	LD-98-EO			626	VON
1	EA	OH STOP	100S			630	GLY
1	EA	SURFACE CLOSER	4111 EDA			689	LCN
1	EA	RAIN DRIP	142AA			AA	ZER
1	EA	DOOR SWEEP	8198AA			AA	ZER
1	EA	THRESHOLD	566A			A	ZER
			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

Hardware Group No. 43

For use on Door #(s):

D202A					

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
			HARDWARE BY DOOR MANUFACTURER				

END OF SECTION

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:
   1. Interior standard steel doors and frames.
   2. Exterior standard steel doors and frames.
   3. Interior custom hollow-metal doors and frames.
   4. Exterior custom hollow-metal doors and frames.

B. Related Requirements:
   1. Section 08 14 16 “Flush Wood Doors” for wood doors
   2. Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:
   1. Elevations of each door type.
   2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
   3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
   4. Locations of reinforcement and preparations for hardware.
   5. Details of each different wall opening condition.
   6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
   7. Details of anchorages, joints, field splices, and connections.
   8. Details of accessories.
   9. Details of moldings, removable stops, and glazing.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

B. Oversize Construction Certification: For assemblies required to be fire-rated and exceeding limitations of labeled assemblies.

C. Qualification Data: For door inspector.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
3. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.8 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 QUALITY ASSURANCE

A. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:

1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

B. Egress Door Inspector Qualifications: Inspector for field quality control inspections of egress door assemblies shall meet the qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ceco Door; ASSA ABLOY.
2. Curries Company; ASSA ABLOY.
3. Pioneer Industries.
4. Republic Doors and Frames.
5. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection

ratings and temperature-rise limits indicated on drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Assemblies: Provide assemblies with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
2. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
3. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

C. Thermally Rated Door & Frame Assemblies: Provide door & frame assemblies with U-factor of not more than 0.50 deg Btu/F x h x sq. ft. when tested according to ASTM C 518.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3; SDI A250.4, Level A. At all interior hollow metal locations unless otherwise noted.

1. Doors:
   a. Type: As indicated in the Door and Frame Schedule.
   b. Thickness: 1-3/4 inches.
   c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch.
   d. Edge Construction: Model 1, Full Flush.
   e. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.
   f. Core: Manufacturer's standard.
   g. Fire-Rated Core: Manufacturer's standard laminated mineral board core for fire-rated and temperature-rise-rated doors.
2. Frames:
   a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
   b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
   c. Construction: Face welded.
3. Exposed Finish: Factory primed, for field finishing, unless otherwise noted.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Maximum-Duty Doors and Frames: SDI A250.8, Level 4; SDI A250.4, Level A. At all exterior hollow metal locations unless otherwise noted.

1. Doors:
   a. Type: As indicated in the Door and Frame Schedule.

b. Thickness: 1-3/4 inches.

c. Face: Metallic-coated steel sheet, minimum thickness of 0.067 inch, with minimum A60 coating.

d. Edge Construction: Model 2, Seamless.

e. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.

f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.

g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.

h. Core: As required to meet thermal requirements listed above and to resist moisture.

i. Fire-Rated Core: Manufacturer's standard core for fire-rated doors.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch, with minimum A60 coating.

b. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.5 BORROWED LITES

A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch.

B. Construction: Face welded.

C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.

2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.

3. Anchors: At new construction, wire for masonry or manufacturer's standard galvanized anchor for wall type as recommended.

4. Post-installed Expansion Anchor: At existing construction and/or when specifically approved by Architect PRIOR to installation, minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M; hot-dip galvanized according to ASTM A 153/A 153M, Class B.

2.7 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

2.8 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted hairline joints.

1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches on center and not more than 2 inches on center from each corner.

2.9 STEEL FINISHES

A. Factory Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.10 LOUVERS

A. Provide louvers for interior doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.020-inch-thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
2. Lightproof Louver: Stationary louvers constructed with baffles to prevent light from passing from one side to the other.
3. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.

B. Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

C. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.2 INSTALLATION

A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.
2. Fire-Rated Openings: Install frames according to NFPA 80.
3. Floor Anchors: Secure with expansion anchors or power-actuated fasteners.
4. Non-Masonry Walls: Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
6. In-Place Concrete: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3. Smoke-Control Doors: Install doors according to NFPA 105.

D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

C. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

3.4 ADJUSTING

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated (Galvanized) Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install all wood doors and components specified herein and shown on all Schedules and Drawings.

B. Related Requirements:

1. Section 08 11 13 - Hollow Metal Doors and Frames.
2. Section 08 71 00 - Door Hardware.
3. Section 08 80 00 "Glazing" for glass view panels in flush wood doors.

1.3 REFERENCE STANDARDS

A. ANSI A208.1 - Standard for Particle Board; 1998.

B. ASTM E 413 - Classification for Rating Sound Insulation; 2004.

C. ASTM E 1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems; 1991 (Reapproved 2000).

D. Michigan Building Code (MBC) 2015.

E. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

F. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2010.

G. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

H. WDMA I.S.1-A - Architectural Wood Flush Doors; Window and Door Manufacturers Association; 2004.

1.4 COORDINATION

A. Coordinate all work with job site superintendent and all applicable trades.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door louvers.
5. Door trim for openings.
6. Factory-machining criteria.
7. Factory- finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
3. Details of frame for each frame type, including dimensions and profile.

4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of blocking for hardware attachment.
6. Dimensions and locations of mortises and holes for hardware.
7. Clearances and undercuts.
8. Requirements for veneer matching.
9. Doors to be factory finished and application requirements.
10. WOMA Quality grade: Custom.
11. WOMA Performance Level: Extra Heavy Duty.

C. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish.
2. Plastic laminate, 6 inches square, for each color, texture, and pattern selected.
3. Polymer edging, in manufacturer's standard colors.
4. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
5. Louver blade and frame sections, 6 inches long, for each material and finish specified.
6. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
3. Submit copy of DHI's Fire and Egress Door Assembly Inspector (FDAI) certificate.

B. Field quality-control reports.

C. Sample Warranty: For special warranty.

1.8 CLOSEOUT SUBMITTALS

A. Special warranties.

B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 QUALITY ASSURANCE

A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

B. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies shall comply with qualifications set forth in NFPA 80, Section 5.2.3.1 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

C. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies shall comply with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on top rail with opening number used on Shop Drawings.

D. Protect doors with resilient packaging. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges if stored more than one week. Break seal on site to permit ventilation.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
    a. Delamination of veneer.
    b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
    c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flush wood doors from single manufacturer.

B. Masonite Architectural; Aspiro™ Series.

C. Oshkosh Architectural Door Company; Product GP: www.oshkoshdoor.com.

D. VT Industries Inc.; Product 5502: www.vtindustries.com.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Wood Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with UL 10C or NFPA 252.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

2.3 FLUSH WOOD DOORS, GENERAL

A. Interior Wood Flush Doors: Window & Door Manufacturers Association publication ANSI/WDMA I.S 1A “Industry Standard for Interior Architectural Wood Flush Doors”.

B. Interior Stile and Rail Wood Doors: Window & Door Manufacturers Association publication ANSI/WDMA I.S. 6A “Industry Standard for Interior Architectural Wood Stile and Rail Doors”.

C. Fire-Rated Wood Doors: Conforming to NFPA 80; listed and labeled for required ratings based on testing at positive pressure NFPA 252 or UL 10C by UL or other testing agency acceptable to authorities having jurisdiction.

D. Sound Retardant Doors: Minimum STC of 47, calculated in accordance with ASTM E 413, tested in accordance with ASTM E 90.

2.4 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Doors:

1. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
2. Performance Grade:
   a. ANSI/WDMA I.S. 1A Heavy Duty unless otherwise indicated on Drawings.
3. ANSI/WDMA I.S. 1A Grade: Custom.
4. Faces: Single-ply wood veneer not less than 1/50 inch thick.
   a. Species: Select white maple.
   b. Cut: Plain sliced (flat sliced).
   c. Match between Veneer Leaves: Book match.
   d. Assembly of Veneer Leaves on Door Faces: Center-balance match.
   e. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
   f. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 10 feet or more.
   g. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
   h. Veneer Grade: A.
5. Exposed Vertical and Top Edges: Same species as faces - Architectural Woodwork Standards edge Type A.
   a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
   b. Fire-Rated Pairs of Doors: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
   c. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
      1) Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.
6. Core for Non-Fire-Rated Doors:
   a. ANSI A208.1, Grade LD-2 particleboard.
7. Blocking: Provide wood blocking in particleboard-core doors as follows:
   a. 5-inch top-rail blocking, in doors indicated to have closers.
   b. 5-inch bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
   c. 5-inch midrail blocking, in doors indicated to have exit devices.
   d. Provide solid blocking for other through bolted hardware.
   e. Glued wood stave.
   f. WDMA I.S. 10 structural composite lumber.
      1) Screw Withdrawal, Door Face: 550 lbf.
      2) Screw Withdrawal, Vertical Door Edge: 550 lbf.
   g. Either glued wood stave or WDMA I.S. 10 structural composite lumber.

8. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
    a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as follows:
        1) 5-inch top-rail blocking.
        2) 5-inch bottom-rail blocking, in doors indicated to have protection plates.
        3) 5-inch midrail blocking, in doors indicated to have armor plates.
        4) 5-inch midrail blocking, in doors indicated to have exit devices.
9. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.
    1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
    2. Comply with NFPA 80 requirements for fire-rated doors.
B. Factory machine doors for hardware that is not surface applied.
    1. Locate hardware to comply with DHI-WDHS-3.
    2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
    3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
    4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
C. Openings: Factory cut and trim openings through doors.
    1. Light Openings: Trim openings with moldings of material and profile indicated.
    2. Louvers: Factory install louvers in prepared openings.

2.6 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing.
    1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
    2. Finish faces, all four edges, edges of cutouts, and mortises.
    3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
B. Factory finish all wood veneered doors.
C. Transparent Finish:
    1. ANSI/WDMA I.S. 1A Grade: Custom.
    2. Finish: ANSI/WDMA I.S. 1A TR-6 Catalyzed Polyurethane.
    3. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
    1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
    2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 08 71 00 "Door Hardware."

B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Coordinate installation of glazing.

D. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

E. Install fire-rated doors and frames in accordance with NFPA 80.

F. Install smoke- and draft-control doors in accordance with NFPA 105.

G. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

H. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

1. Provide inspection of installed Work through specified standard for the specified grade.
2. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
3. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

C. Adjust doors to hang free from rattling when in latched position.

D. Operation: Rehang or replace doors that do not swing or operate freely.

E. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION

SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
(ADDENDUM 003)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Aluminum-framed storefront systems.
   2. Aluminum-framed entrance door systems.

B. Related Requirements:
   1. Section 07 92 00 “Joint Sealants” for perimeter sealant and back-up materials.
   2. Section 08 71 00 “Door Hardware” for door hardware other than specified in this section.
   3. Section 08 80 00 “Glazing” for glass and glazing accessories other than specified in this section.

1.3 COORDINATION

A. Coordinate all work with job site superintendent and all applicable trades.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site; require attendance by all affected installers.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
   1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
   2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:
      a. Joinery, including concealed welds.
      b. Anchorage.
      c. Expansion provisions.
      d. Glazing.
      e. Flashing and drainage.
   3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
   4. Include point-to-point wiring diagrams showing the following:
      a. Power requirements for each electrically operated door hardware.
      b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication, and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

F. Delegated-Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.

B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency and/or a qualified testing agency.

D. Quality-Control Program: Developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C1401. Include periodic quality-control reports.

E. Source quality-control reports.

F. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

B. Maintenance Data for Structural Sealant: For structural-sealant-glazed storefront to include in maintenance manuals. Include ASTM C1401 recommendations for post-installation-phase quality-control program.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

C. Structural-Sealant Glazing: Comply with ASTM C1401 for design and installation of storefront systems that include structural glazing.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Ordering: Comply with manufacturer’s ordering instructions and lead time requirements to avoid construction delays.

B. Handle products of this section in accordance with AAMA CW-10.

C. Protect finished aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.10 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.11 MOCKUPS

A. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical wall area as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect/Engineer specifically approves such deviations in writing.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures, including, but not limited to, excessive deflection.
   b. Noise or vibration created by wind and thermal and structural movements.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   d. Water penetration through fixed glazing and framing areas.
   e. Failure of operating components.
2. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:
   a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
   b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

C. Structural Loads:
1. Wind Loads: As indicated on Drawings, or, if not indicated, in accordance with applicable codes and manufacturer recommendations.

D. Deflection of Framing Members: At design wind pressure, as follows:
1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.
a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.
3. Cantilever Deflection: Where framing members overhang an anchor point, as follows:
a. Perpendicular to Plane of Wall: No greater than 1/240 of clear span plus 1/4 inch for spans greater than 11 feet 8-1/4 inches or 1/175 times span, for spans of less than 11 feet 8-1/4 inches.

E. Structural: Test according to ASTM E330/E330M as follows:
1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test according to ASTM E331 as follows:
1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft.

G. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:
1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft.
2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

H. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement.

I. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):
    a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.42 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
    b. Entrance Doors (glazed aluminum): U-factor of not more than 0.77 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
    c. Entrance Doors (flush aluminum): U-factor of not more than 0.50 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
    d. Venting Windows: Whole window U-factor of not more than 0.50 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
2. Solar Heat-Gain Coefficient (SHGC):
    a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined according to NFRC 200.
    b. Entrance Doors: SHGC of not more than 0.40 as determined according to NFRC 200.
    c. Venting Windows: Whole window SHGC of not more than 0.40 as determined according to NFRC 200.
3. Air Leakage:
    a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft. when tested according to ASTM E283.
    b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
    c. Venting Windows: Whole window air leakage of not more than 0.3 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft. when tested in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
4. Condensation Resistance Factor (CRF):
    a. Fixed Glazing and Framing Areas: CRF for the system of not less than 55 as determined according to AAMA 1503.
    b. Entrance Doors: CRF of not less than 57 as determined according to AAMA 1503.
    c. Venting Windows: Whole window CRF of not less than 55 as determined according to AAMA 1503.

J. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
    1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
    2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
        a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
        b. Low Exterior Ambient-Air Temperature: 0 deg F.
        c. Interior Ambient-Air Temperature: 75 deg F.

K. Structural-Sealant Joints:
    1. Designed to carry gravity loads of glazing.

L. Structural Sealant: ASTM C1184. Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed, aluminum-framed entrances and storefronts without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure.

1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate, because sealant-to-substrate bond strength exceeds sealant's internal strength.

2.2 SOURCE LIMITATIONS

A. Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.3 STOREFRONT SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Cross Aluminum Products.
   2. EFCO Corporation.
   3. Kawneer North America, an Arconic company.
   4. Special-Lite.
   5. Tubelite Inc.
   6. Wausau Window and Wall Systems.
   7. YKK AP America Inc.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
   1. Exterior Framing Construction: Thermally broken with 2” x 4-1/2” profile.
      a. Products:
         1) Cross Aluminum Products – T-14000 Series (U-factor of 0.39 when UCOG=0.28).
         2) EFCO Corporation – Series 403 (U-factor of 0.42 when UCOG=0.30).
         3) Kawneer North America, an Arconic company – Trifab VersaGlaze 451T (U-factor of 0.36 when UCOG=0.28).
         4) Special-Lite – SL-450TB (U-factor of 0.41 when UCOG=0.29).
         5) Tubelite Inc. – T14000 Series (U-factor of 0.39 when UCOG=0.28).
         6) Wausau Window and Wall Systems – 14000 Series (U-factor of 0.39 when UCOG=0.28).
         7) YKK AP America Inc. – YES 45 XT Center Set (U-factor of 0.36 when UCOG=0.29).
   2. Interior Vestibule Framing Construction: Nonthermal with 1-3/4” x 4-1/2” profile.
      a. Products:
         1) Cross Aluminum Products – E-4500 Series.
         2) EFCO Corporation –Series 401(NT).
         3) Kawneer North America, an Arconic company –Trifab VersaGlaze 450.
         4) Special-Lite – SL-45 FG.
         5) Tubelite Inc. –4500.
         6) Wausau Window and Wall Systems – 4500.
         7) YKK AP America Inc. –YES 45 FS.
   3. Glazing System: Retained mechanically with gaskets on four sides.

4. Glazing Plane: Centered (front to back) at exterior, centered at interior.
5. Glazing Stops: Flush.
6. Finish: See “Aluminum Finishes” section.
7. Fabrication Method: Field-fabricated stick system.
8. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
9. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

A. Exterior Entrance Doors: Thermal glazed aluminum.

1. Products:
   a. Cross Aluminum Products – WS-500 Wide Stile (U-factor of 0.61 when UCOG=0.28).
   b. EFCO Corporation – ThermaStile D502 Wide Stile (U-factor of 0.65 when UCOG=0.28).
   c. Kawneer North America, an Arconic company – 500T Insulpour Thermal Entrance Wide Stile (U-factor of 0.55 when UCOG=0.28).
   d. Special-Lite – SL-15 Wide Stile Monumental (U-factor of 0.63 when UCOG=0.28).
   e. Tubelite Inc. – Therml=Block Wide Stile (U-factor of 0.61 when UCOG=0.28).
   f. Wausau Window and Wall Systems – Therml=Block Wide Stile (U-factor of 0.61 when UCOG=0.28).
   g. YKK AP America Inc. – 50XT Megatherm Wide Stile (U-factor of 0.53 when UCOG=0.28).
2. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
   a. Door Construction: 1-3/4-inch minimum overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated, and fillet welded or that incorporate concealed tie rods.
      1) Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
   b. Door Design:
      1) **Top Rail: 7 1/2 inches wide minimum (no exceptions, width required to accommodate overhead door stop and closer)**.
      2) Vertical Stiles: 5 inches wide.
      3) Bottom Rail: 10 inches wide.
   c. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
      1) Provide nonremovable glazing stops on outside of door.
   d. Finish: Match adjacent storefront framing finish.

B. Exterior Entrance Doors: Thermal solid flush aluminum.

1. Products:

a. Cross Aluminum Products – FL-400T (U-factor of 0.34 for flush door).
b. Special-Lite – SL-16 (U-factor of 0.47 for flush door).

2. Entrance Doors: Manufacturer's standard flush entrance doors for manual-swing or automatic operation.
   a. Door Construction: 1-3/4-inch minimum overall thickness.
   b. Door Design: See door schedule for locations and types.
   c. Surface: Smooth.
   d. Finish: Match adjacent storefront framing finish.

C. Interior Entrance Doors: Non-thermal.
1. Products:
   a. Cross Aluminum Products – WS-500 Wide Stile.
   b. EFCO Corporation – D500 Wide Stile.
   c. Kawneer North America, an Arconic company – 500 Standard Entrance.
   d. Special-Lite – SL-15 Wide Stile Monumental.
   e. Tubelite Inc. – Standard Wide Stile.
   f. Wausau Window and Wall Systems – Standard Wide Stile.
   g. YKK AP America Inc. – 50M Monumental Wide Stile.
2. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
   a. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated, and fillet welded or that incorporate concealed tie rods.
   b. Door Design:
      1) Top Rail: 8 inches wide (no exceptions, width required to accommodate overhead door stop and closer).
      2) Vertical Stiles: 5 inches wide.
      3) Bottom Rail: 10 inches wide.
   c. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
   d. Finish: Match adjacent storefront framing finish.
3. Sliding Doors:
   a. Manufacturer: Wilson Partitions.
      1) Model: Series 500 Trim 103-1
      2) Clear Anodized.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 08 71 00 "Door Hardware".

B. Weather Stripping: Manufacturer's standard replaceable components.
1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

C. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

2.6 GLAZING

A. Glazing: Comply with Section 08 80 00 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.

D. Structural Glazing Sealants: ASTM C1184 chemically curing silicone formulation that is compatible with system components with which it comes in contact; specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in storefront system indicated.

1. Color: As selected by Architect from manufacturer's full range of colors.

E. Weatherseal Sealants: ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

1. Color: Match structural sealant.

2.7 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.

C. Extruded Structural Pipe and Tubes: ASTM B429/B429M.

D. Structural Profiles: ASTM B308/B308M.

E. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

F. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

E. Rigid PVC Filler.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

D. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.

E. Storefront Framing: Fabricate components for assembly using shear-block system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.10 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: As selected by Architect from full range of industry colors and color densities.

2.11 SOURCE QUALITY CONTROL

A. Structural Sealant: Perform quality-control procedures complying with ASTM C1401 recommendations, including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. In the event of discrepancy, immediately notify the Architect/Engineer, and do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.

2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 07 92 00 "Joint Sealants," to produce weathertight installation, unless otherwise specified within manufacturers' written recommendations.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF OPERABLE UNITS

A. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

3.4 INSTALLATION OF GLAZING

A. Install glazing as specified in Section 08 80 00 "Glazing."

3.5 INSTALLATION OF STRUCTURAL GLAZING

A. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

B. Set glazing into framing according to sealant manufacturer and framing manufacturer's written instructions and standard practice. Use a spacer or backer as recommended by manufacturer.

C. Set glazing with proper orientation so that coatings face exterior, or interior as specified.

D. Hold glazing in place using temporary retainers of type and spacing recommended by manufacturer, until structural sealant joint has cured.

E. Apply structural sealant to completely fill cavity, according to sealant manufacturer and framing manufacturer's written instructions and in compliance with local codes.

F. Apply structural sealant at temperatures indicated by sealant manufacturer for type of sealant.

G. Allow structural sealant to cure according to manufacturer's written instructions.

H. Clean and protect glass as indicated in Section 08 80 00 "Glazing."

3.6 INSTALLATION OF WEATHERSEAL SEALANT

A. After structural sealant has completely cured, remove temporary retainers, and insert backer rod between lites of glass as recommended by sealant manufacturer.

B. Install weatherseal sealant to completely fill cavity, according to sealant manufacturer's written instructions, to produce weatherproof joints.

3.7 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.
   1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
   2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.8 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
   1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
   2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
   3. Alignment:
      a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2-inch-wide, limit offset from true alignment to 1/16 inch.
      b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
      c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
   4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.9 ADJUSTING

A. Adjust operating hardware for smooth operation.

3.10 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

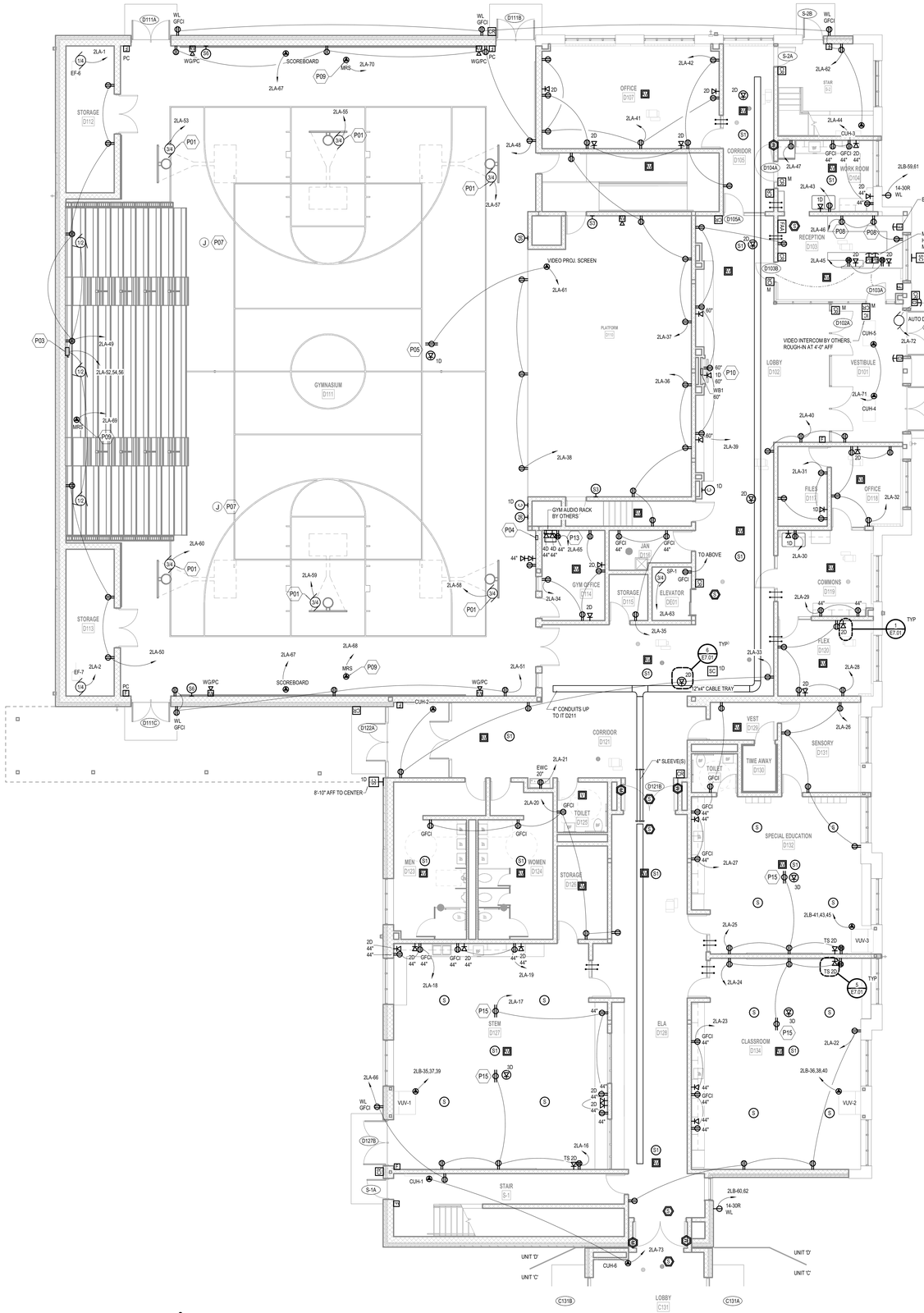
C. Remove excess sealant by method acceptable to sealant manufacturer.

3.11 PROTECTION

A. Protect installed products from damage during subsequent construction.

END OF SECTION

Appendix E - Building Access Diagram



NORTH

UNIT 'D' FIRST FLOOR POWER & COMMUNICATIONS PLAN

1/8" = 1'-0"

POWER & COMMUNICATION GENERAL NOTES

1. REFER TO ELECTRICAL GENERAL NOTES ON SHEET E0.01.
2. REFER TO CODE COMPLIANCE PLAN FOR LOCATIONS AND RATINGS OF VERTICAL AND HORIZONTAL BUILDING ASSEMBLIES. PROVIDE APPROPRIATE FIRESTOPPING SYSTEMS PER SPECIFICATIONS TO MEET ALL APPLICABLE CODES.
3. PROVIDE 120VAC POWER FOR ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS.
   A. REFER TO MECHANICAL/HVAC DRAWINGS FOR LOCATIONS AND QUANTITIES OF DAMPERS.
   B. CONNECT TO DEDICATED 20A BRANCH CIRCUIT (WITH BREAKER LOCK-ON ACCESSORY) IN LOCAL PANELBOARD FOR DAMPER(S) IN EACH AREA (DAMPERS MAY BE GROUPED ON EACH CIRCUIT).
   C. TERMINATE W/ BOX-COVER FUSIBLE DISCONNECT SWITCH AT EACH DAMPER.
   D. PROVIDE FIRE ALARM DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH DAMPER (UNLESS COVERED BY ANOTHER DUCT DETECTOR WITHIN 5 FEET).
   E. PROVIDE FIRE ALARM ADDRESSABLE RELAY(S) FOR INTERLOCKING DAMPER W/ CORRESPONDING HVAC UNIT(S) PER CODE REQUIREMENTS.
4. PROVIDE BOX-COVER FUSIBLE DISCONNECT SWITCH (ON BUILDING INTERIOR IN ACCESSIBLE LOCATION) FOR EACH SMALL (< 1/2 HP) MECHANICAL AND/OR PLUMBING EQUIPMENT MOTOR LOAD WHERE MORE THAN ONE UNIT IS CONNECTED TO A COMMON BRANCH CIRCUIT. TYPICAL EQUIPMENT TYPES INCLUDE BUT ARE NOT LIMITED TO CABINET HEATERS, DAMPERS, EXHAUST FANS, FAN COIL UNITS, PUMPS, UNIT HEATERS, VAV BOXES, ETC.
5. DESIGNATED CABLING PATHWAYS (CONDUITS, CABLE TRAYS, PENETRATION SLEEVES, ETC.) SHALL BE RESERVED FOR DIV. 27 COMMUNICATIONS CABLING AND DIV. 28 SAFETY/SECURITY CABLING ONLY. OTHER CABLING TYPES, SUCH AS DIV. 23 CONTROLS, DIV. 26 CONTROLS, AND ARCHITECTURAL EQUIPMENT CABLING SHALL BE SUPPORTED AND SLEEVED BY OTHER INDEPENDENT PATHWAYS, HANGERS, AND SUPPORTS.
6. CONSOLIDATE ALL POWER SUPPLIES REQUIRED FOR ELECTRONIC DOOR HARDWARE (REF. SECTION 08 71 00) TO CENTRAL LOCATION(S) ADJACENT TO DESIGNATED ACCESS CONTROL EQUIPMENT LOCATION(S). CONNECT ALL POWER SUPPLIES TO DEDICATED LOCAL BRANCH CIRCUIT(S) AS DESIGNATED.

ELECTRICAL KEYNOTES

P01	E.C. SHALL PROVIDE AND INSTALL 4" SQUARE JUNCTION BOX WITHIN 3'-0" OF WINCH LOCATION FOR TWIST-LOCK RECEPTACLE. TWIST LOCK RECEPTACLE AND COVER PROVIDED BY EQUIPMENT PROVIDER. (1) HOOK-UP REQUIRED PER DEVICE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.
P03	E.C. SHALL PROVIDE AND INSTALL NON-FUSIBLE SAFETY SWITCHES FOR BLEACHER MOTOR. JUNCTION BOX SHALL BE MOUNTED AT 5'-0" AFF. COORDINATE LOCATION WITH EQUIPMENT PROVIDER. REFER TO BLEACHER DETAILS ON ARCHITECTURE SHEETS FOR FURTHER DETAILS.
P04	PROVIDE ROUGH-IN FOR GYM EQUIPMENT CONTROL TOUCH PANEL PROVIDED BY GYM EQUIPMENT PROVIDER. COORDINATE ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S INSTRUCTIONS.
P05	COORDINATE LOCATION AND MOUNTING OF CEILING MOUNTED RECEPTACLE AND DATA ACTIVATION WITH OWNER'S AV CONTRACTOR.
P07	INSTALL JUNCTION BOX IN EXPOSED STRUCTURE AND 1" CONDUIT PATHWAY BACK TO ELECTRICAL D209 FOR FUTURE CIRCUIT FOR FUTURE BATTING CAGE NETS.
P08	DEVICES SHALL BE POP UP POWER GROMMET. MOCKETT PCS4ICEE OR EQUAL. COLOR SHALL BE SILVER. POWER GROMMETS SHALL BE INSTALLED IN TOP OF MILLWORK DESK. COORDINATE WITH OTHER TRADES.
P09	INTEGRATE CONTROL OF MOTORIZED ROLLER SHADES WITH GYMNASIUM EQUIPMENT CONTROL SYSTEM AND PROVIDE CONTROL FROM SYSTEM TOUCH SCREEN.
P10	POWER AND DATA SHOWN TO BE INSTALLED IN WALL BOX, REFER TO 26 05 33.16.
P13	COORDINATE POWER AND DATA TO BE INSTALLED INSIDE RACK. RACK LOCATION DETERMINED BY OWNER'S TECHNOLOGY CONSULTANT.
P15	COORDINATE EXACT LOCATION OF CEILING RECEPTACLE FOR PROJECTOR WITH OWNER'S TECHNOLOGY CONSULTANT PRIOR TO INSTALLATION.

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ELEMENTARY NEW ADDITION & REMODELING

DELTON KELLOGG SCHOOLS

DELTON, MICHIGAN

ISSUANCES

12.07.2021 BIDS & CONSTRUCTION

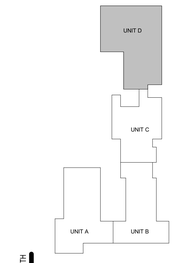
DRAWN JFB

REVIEWED PRH

PROJECT NO. 5-4909

UNIT 'D' FIRST FLOOR POWER & COMMUNICATIONS PLAN

E2.1D



KEYPLAN

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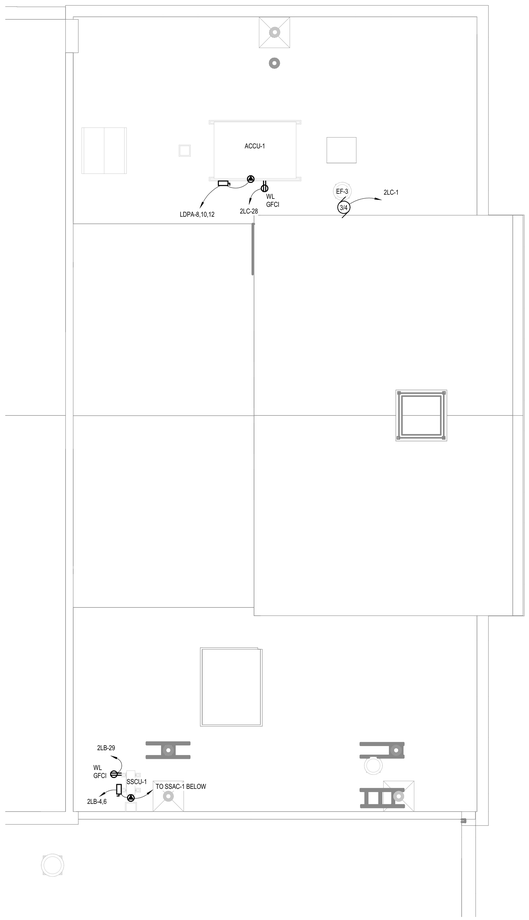
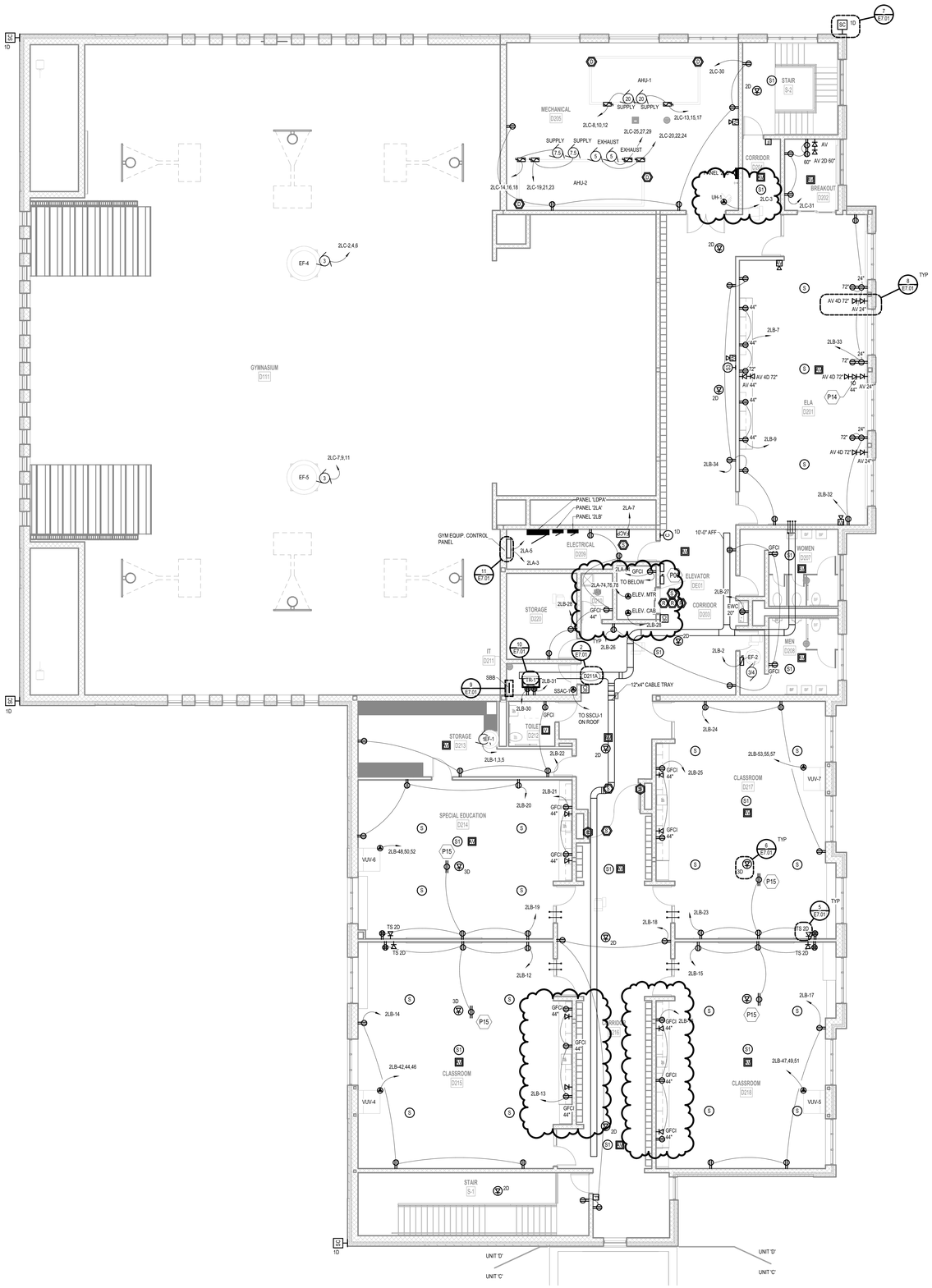
Appendix E - Building Access Diagram



NORTH

PARTIAL ROOFTOP POWER PLAN
1/8" = 1'-0"



NORTH

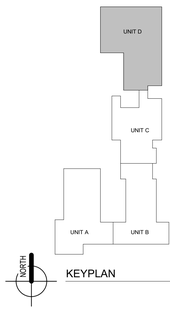
UNIT 'D' SECOND FLOOR POWER & COMMUNICATIONS PLAN
1/8" = 1'-0"

POWER & COMMUNICATION GENERAL NOTES

1. REFER TO ELECTRICAL GENERAL NOTES ON SHEET E0.01.
2. REFER TO CODE COMPLIANCE PLAN FOR LOCATIONS AND RATINGS OF VERTICAL AND HORIZONTAL BUILDING ASSEMBLIES. PROVIDE APPROPRIATE FIRESTOPPING SYSTEMS PER SPECIFICATIONS TO MEET ALL APPLICABLE CODES.
3. PROVIDE 120VAC POWER FOR ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS.
   A. REFER TO MECHANICAL/HVAC DRAWINGS FOR LOCATIONS AND QUANTITIES OF DAMPERS.
   B. CONNECT TO DEDICATED 20A BRANCH CIRCUIT (WITH BREAKER LOCK-ON ACCESSORY) IN LOCAL PANELBOARD FOR DAMPER(S) IN EACH AREA (DAMPERS MAY BE GROUPED ON EACH CIRCUIT).
   C. TERMINATE W/ BOX-COVER FUSIBLE DISCONNECT SWITCH AT EACH DAMPER.
   D. PROVIDE FIRE ALARM DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH DAMPER (UNLESS COVERED BY ANOTHER DUCT DETECTOR WITHIN 5 FEET).
   E. PROVIDE FIRE ALARM ADDRESSABLE RELAY(S) FOR INTERLOCKING DAMPER W/ CORRESPONDING HVAC UNIT(S) PER CODE REQUIREMENTS.
4. PROVIDE BOX-COVER FUSIBLE DISCONNECT SWITCH (ON BUILDING INTERIOR IN ACCESSIBLE LOCATION) FOR EACH SMALL (< 1/2 HP) MECHANICAL AND/OR PLUMBING EQUIPMENT MOTOR LOAD WHERE MORE THAN ONE UNIT IS CONNECTED TO A COMMON BRANCH CIRCUIT. TYPICAL EQUIPMENT TYPES INCLUDE BUT ARE NOT LIMITED TO CABINET HEATERS, DAMPERS, EXHAUST FANS, FAN COIL UNITS, PUMPS, UNIT HEATERS, VAV BOXES, ETC.
5. DESIGNATED CABLING PATHWAYS (CONDUITS, CABLE TRAYS, PENETRATION SLEEVES, ETC.) SHALL BE RESERVED FOR DIV. 27 COMMUNICATIONS CABLING AND DIV. 28 SAFETY/SECURITY CABLING ONLY. OTHER CABLING TYPES, SUCH AS DIV. 23 CONTROLS, DIV. 26 CONTROLS, AND ARCHITECTURAL EQUIPMENT CABLING SHALL BE SUPPORTED AND SLEEVED BY OTHER INDEPENDENT PATHWAYS, HANGERS, AND SUPPORTS.
6. CONSOLIDATE ALL POWER SUPPLIES REQUIRED FOR ELECTRONIC DOOR HARDWARE (REF. SECTION 08 71 00) TO CENTRAL LOCATION(S) ADJACENT TO DESIGNATED ACCESS CONTROL EQUIPMENT LOCATION(S). CONNECT ALL POWER SUPPLIES TO DEDICATED LOCAL BRANCH CIRCUIT(S) AS DESIGNATED.

ELECTRICAL KEYNOTES

P06	INSTALL ELEVATOR DISCONNECTS IN RECESSED ENCLOSURE, MINIMUM INTERIOR DIMENSIONS 30"H X 24"W X 8"D. PROVIDE FLUSH MOUNT (FLANGED) FRONT FRAME, REMOVABLE DOOR WITH CONCEALED HINGE, QUARTER-TURN LATCH, FLUSH OR LOW-PROFILE CYLINDER KEY LOCK, NVENT/HOFFMAN CONCEPT SERIES CAT. NO. "CFM3024S" WITH OPTIONS, OR APPROVED EQUIVALENT. COORDINATE FACTORY OR FIELD FINISHING TO MATCH WALL. MOUNT BOTTOM OF ENCLOSURE AT 36" AFF.
P14	PROVIDE 4 11/16" X EXTRA DEEP BOX WITH DOUBLE-GANG RING FOR TOUCHSCREEN BY OWNER'S TECHNOLOGY CONSULTANT. CONNECT TO 1 1/4" CONDUITS FOR AV CABLING PER DETAIL.
P15	COORDINATE EXACT LOCATION OF CEILING RECEPTACLE FOR PROJECTOR WITH OWNER'S TECHNOLOGY CONSULTANT PRIOR TO INSTALLATION.



NORTH

KEYPLAN

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ELEMENTARY NEW ADDITION & REMODELING

DELTON KELLOGG SCHOOLS

DELTON, MICHIGAN

ISSUANCES

12.07.2021 BIDS & CONSTRUCTION
01.21.2022 ADDENDUM 002
03.16.2022 BULLETIN 002

DRAWN JFB
REVIEWED PRH

PROJECT NO. 5-4909

UNIT 'D' SECOND FLOOR POWER & COMMUNICATIONS PLAN

E2.2D

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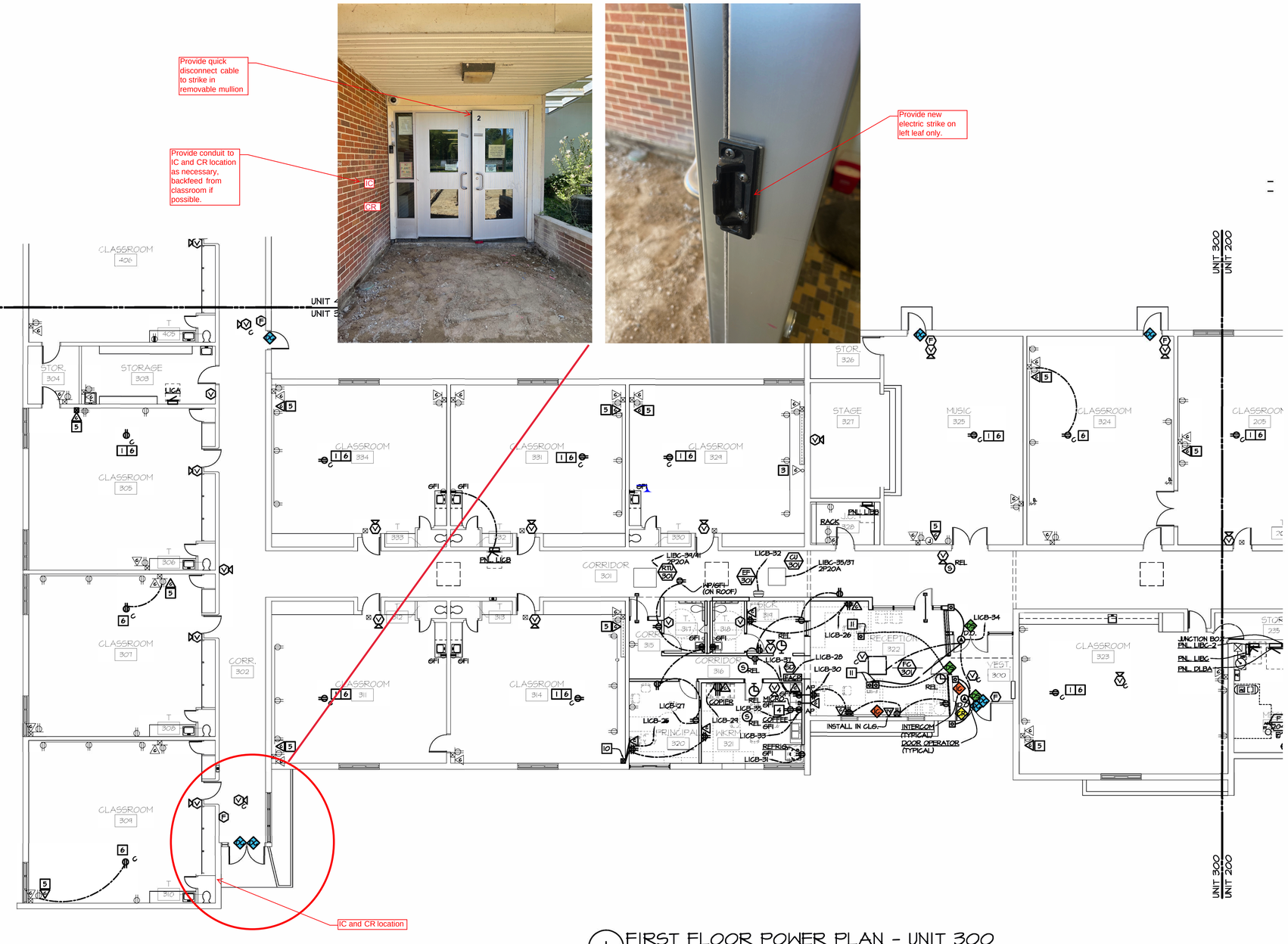
Appendix E - Building Access Diagram

Kingscott
Creating Possibilities
KALAMAZOO | GRAND RAPIDS | CHELSEA
229 East Michigan Ave., Suite 335
Kalamazoo, MI 49007-6403
P: 269.381.4880 | F: 269.381.9110
www.kingscott.com



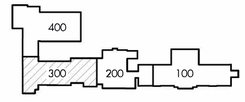
1 FIRST FLOOR POWER PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

Delton Kellogg Elementary

Delton Kellogg Community Schools
Delton, Michigan

REVISIONS/REVIEW DATE

KEY PLAN



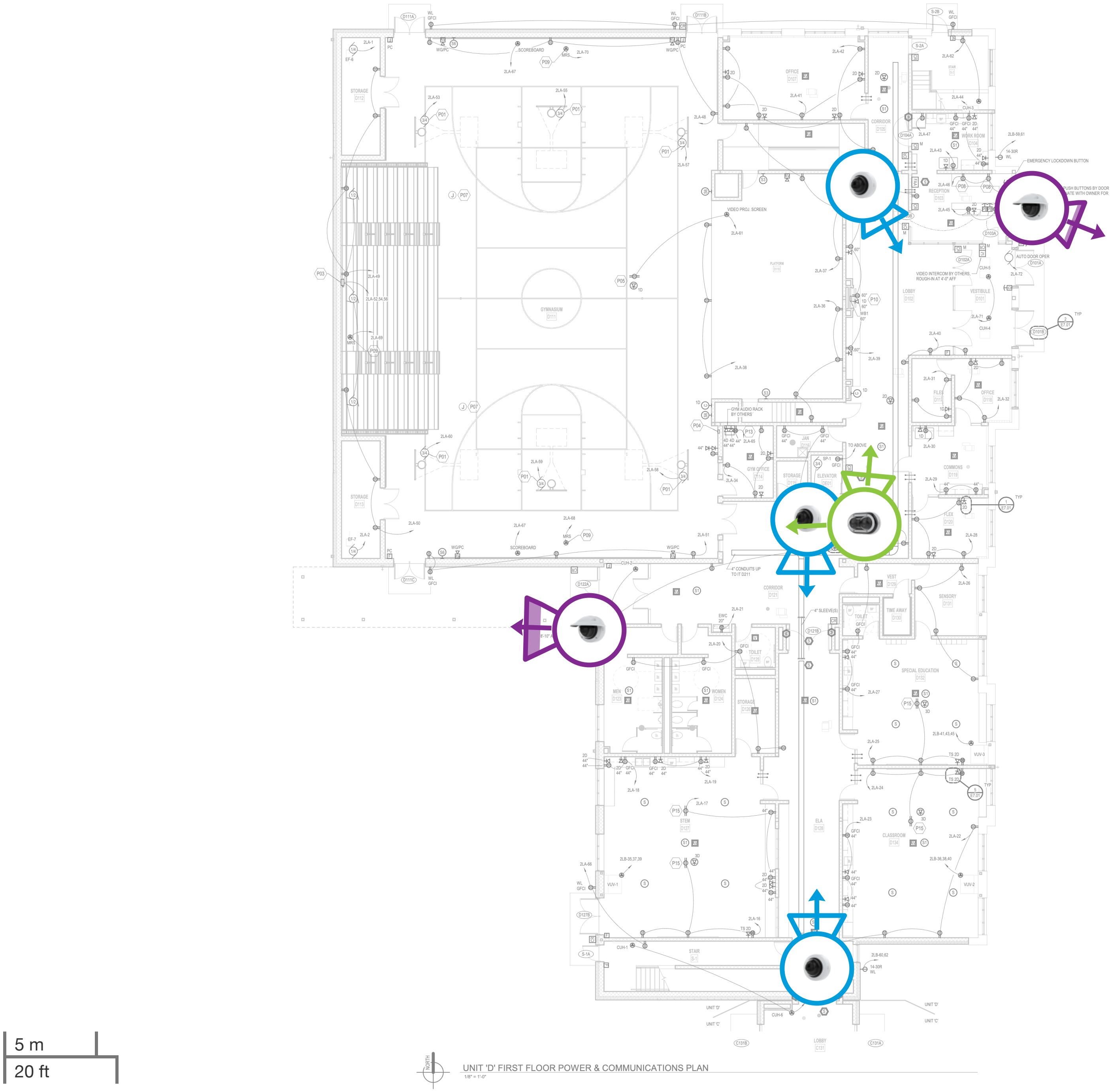
JOB NO. 2480 . 03

NORTH

SHEET TITLE
FIRST FLOOR POWER PLAN - UNIT 300

SHEET NO.
E-E2.3

Appendix F



UNIT 'D' FIRST FLOOR POWER & COMMUNICATIONS PLAN
1/8" = 1'-0"

POWER & COMMUNICATION GENERAL NOTES

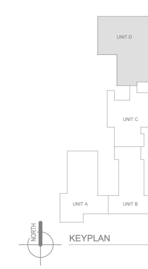
1. REFER TO ELECTRICAL GENERAL NOTES ON SHEET E0.01.
2. REFER TO CODE COMPLIANCE PLAN FOR LOCATIONS AND RATINGS OF VERTICAL AND HORIZONTAL BUILDING ASSEMBLIES. PROVIDE APPROPRIATE FIRESTOPPING SYSTEMS PER SPECIFICATIONS TO MEET ALL APPLICABLE CODES.
3. PROVIDE 120VAC POWER FOR ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS.
   A. REFER TO MECHANICAL/HVAC DRAWINGS FOR LOCATIONS AND QUANTITIES OF DAMPERS.
   B. CONNECT TO DEDICATED 20A BRANCH CIRCUIT (WITH BREAKER LOCK-ON ACCESSORY) IN LOCAL PANELBOARD FOR DAMPER(S) IN EACH AREA (DAMPERS MAY BE GROUPED ON EACH CIRCUIT).
   C. TERMINATE W/ BOX-COVER FUSIBLE DISCONNECT SWITCH AT EACH DAMPER.
   D. PROVIDE FIRE ALARM DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH DAMPER (UNLESS COVERED BY ANOTHER DUCT DETECTOR WITHIN 5 FEET).
   E. PROVIDE FIRE ALARM ADDRESSABLE RELAY(S) FOR INTERLOCKING DAMPER W/ CORRESPONDING HVAC UNIT(S) PER CODE REQUIREMENTS.
4. PROVIDE BOX-COVER FUSIBLE DISCONNECT SWITCH (ON BUILDING INTERIOR IN ACCESSIBLE LOCATION) FOR EACH SMALL (< 1/2 HP) MECHANICAL AND/OR PLUMBING EQUIPMENT MOTOR LOAD WHERE MORE THAN ONE UNIT IS CONNECTED TO A COMMON BRANCH CIRCUIT. TYPICAL EQUIPMENT TYPES INCLUDE BUT ARE NOT LIMITED TO CABINET HEATERS, DAMPERS, EXHAUST FANS, FAN COIL UNITS, PUMPS, UNIT HEATERS, VAV BOXES, ETC.
5. DESIGNATED CABLING PATHWAYS (CONDUITS, CABLE TRAYS, PENETRATION SLEEVES, ETC.) SHALL BE RESERVED FOR DIV. 27 COMMUNICATIONS CABLING AND DIV. 28 SAFETY/SECURITY CABLING ONLY. OTHER CABLING TYPES, SUCH AS DIV. 23 CONTROLS, DIV. 26 CONTROLS, AND ARCHITECTURAL EQUIPMENT CABLING SHALL BE SUPPORTED AND SLEEVED BY OTHER INDEPENDENT PATHWAYS, HANGERS, AND SUPPORTS.
6. CONSOLIDATE ALL POWER SUPPLIES REQUIRED FOR ELECTRONIC DOOR HARDWARE (REF. SECTION 08 71 00) TO CENTRAL LOCATION(S) ADJACENT TO DESIGNATED ACCESS CONTROL EQUIPMENT LOCATION(S). CONNECT ALL POWER SUPPLIES TO DEDICATED LOCAL BRANCH CIRCUIT(S) AS DESIGNATED.

	ELECTRICAL KEYNOTES
P01	E.C. SHALL PROVIDE AND INSTALL 4" SQUARE JUNCTION BOX WITHIN 3'-0" OF WINCH LOCATION FOR TWIST-LOCK RECEPTACLE. TWIST LOCK RECEPTACLE AND COVER PROVIDED BY EQUIPMENT PROVIDER. (1) HOOK-UP REQUIRED PER DEVICE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.
P03	E.C. SHALL PROVIDE AND INSTALL NON-FUSIBLE SAFETY SWITCHES FOR BLEACHER MOTOR. JUNCTION BOX SHALL BE MOUNTED AT 5'-0" AFF. COORDINATE LOCATION WITH EQUIPMENT PROVIDER. REFER TO BLEACHER DETAILS ON ARCHITECTURE SHEETS FOR FURTHER DETAILS.
P04	PROVIDE ROUGH-IN FOR GYM EQUIPMENT CONTROL TOUCH PANEL PROVIDED BY GYM EQUIPMENT PROVIDER. COORDINATE ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S INSTRUCTIONS.
P05	COORDINATE LOCATION AND MOUNTING OF CEILING MOUNTED RECEPTACLE AND DATA ACTIVATION WITH OWNER'S AV CONTRACTOR.
P07	INSTALL JUNCTION BOX IN EXPOSED STRUCTURE AND 1" CONDUIT PATHWAY BACK TO ELECTRICAL D209 FOR FUTURE CIRCUIT FOR FUTURE BATTING CAGE NETS.
P08	DEVICES SHALL BE POP UP POWER GROMMET. MOCKETT PCS43C/EE OR EQUAL. COLOR SHALL BE SILVER. POWER GROMMETS SHALL BE INSTALLED IN TOP OF MILLWORK DESK, COORDINATE WITH OTHER TRADES.
P09	INTEGRATE CONTROL OF MOTORIZED ROLLER SHADES WITH GYMNASIUM EQUIPMENT CONTROL SYSTEM AND PROVIDE CONTROL FROM SYSTEM TOUCH SCREEN.
P10	POWER AND DATA SHOWN TO BE INSTALLED IN WALL BOX, REFER TO 26 05 33.16.
P13	COORDINATE POWER AND DATA TO BE INSTALLED INSIDE RACK. RACK LOCATION DETERMINED BY OWNER'S TECHNOLOGY CONSULTANT.
P15	COORDINATE EXACT LOCATION OF CEILING RECEPTACLE FOR PROJECTOR WITH OWNER'S TECHNOLOGY CONSULTANT PRIOR TO INSTALLATION.

GMB
616.796.0200
www.gmb.com

ELEMENTARY NEW ADDITION & REMODELING
DELTON KELLOGG SCHOOLS
DELTON, MICHIGAN

ISSUANCES
12.07.2021 BIDS & CONSTRUCTION



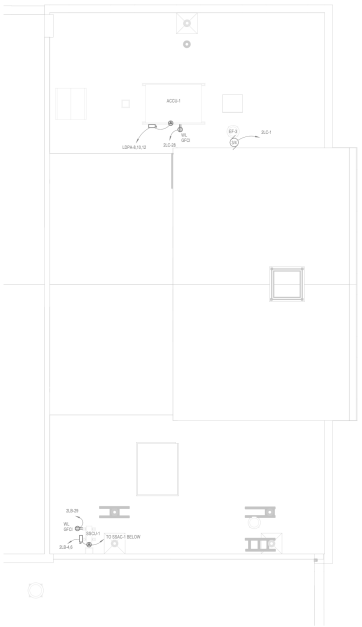
KEYPLAN

DRAWN	JFB
REVIEWED	PRH
PROJECT NO.	5-4909

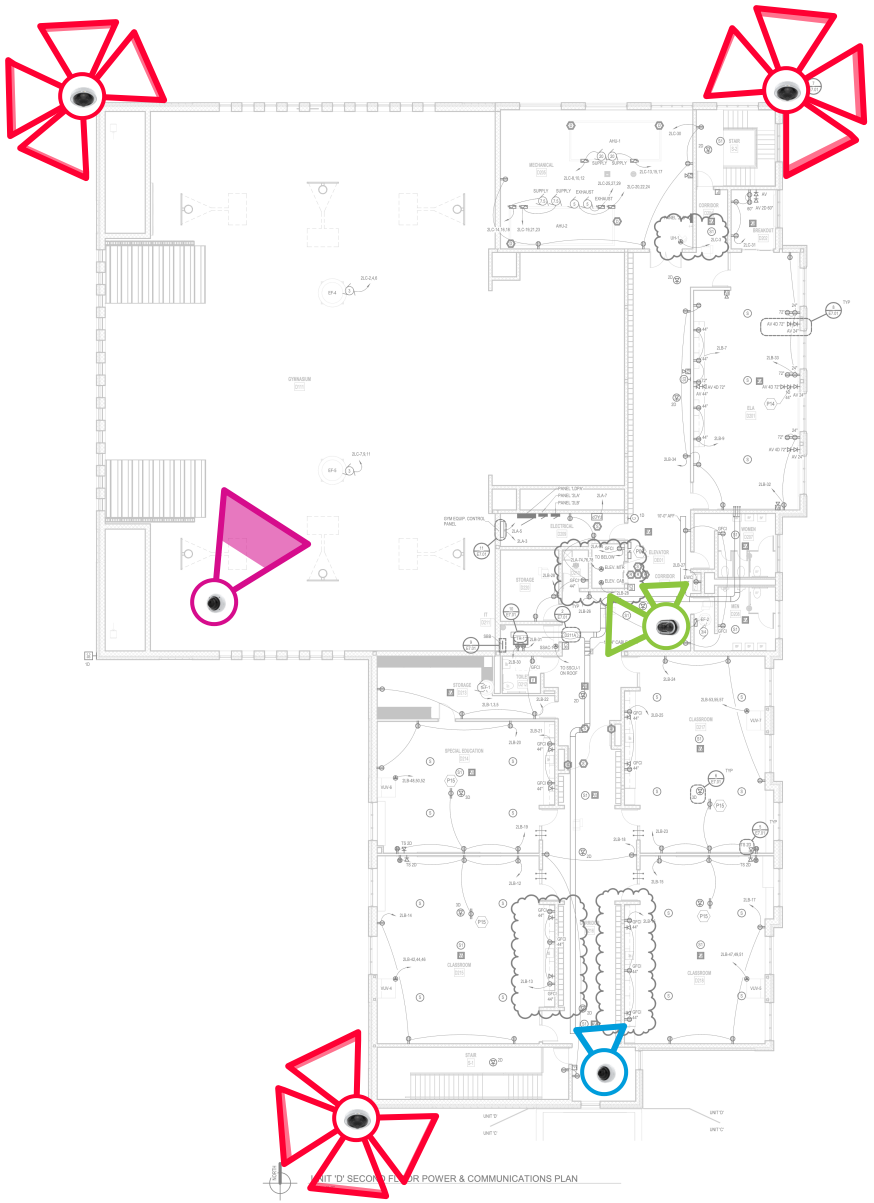
UNIT 'D' FIRST FLOOR POWER & COMMUNICATIONS PLAN

E2.1D

Appendix F



PARTIAL ROOFTOP POWER PLAN



UNIT 'D' SECOND FLOOR POWER & COMMUNICATIONS PLAN

POWER & COMMUNICATION GENERAL NOTES

1. REFER TO ELECTRICAL GENERAL NOTES ON SHEET E0.01.
2. REFER TO CODE COMPLIANCE PLAN FOR LOCATIONS AND RATINGS OF VERTICAL AND HORIZONTAL BUILDING ASSEMBLIES. PROVIDE APPROPRIATE FIRESTOPPING SYSTEMS PER SPECIFICATIONS TO MEET ALL APPLICABLE CODES.
3. PROVIDE 120VAC POWER FOR ALL SMOKE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS.
   A. REFER TO MECHANICAL/HVAC DRAWINGS FOR LOCATIONS AND QUANTITIES OF DAMPERS.
   B. CONNECT TO DEDICATED 20A BRANCH CIRCUIT (WITH BREAKER LOCK-ON ACCESSORY) IN LOCAL PANELBOARD FOR DAMPER(S) IN EACH AREA. DAMPERS MAY BE GROUPED ON EACH CIRCUIT.
   C. PROVIDE 60" M BOX COVER FUSIBLE DISCONNECT SWITCH AT EACH DAMPER.
   D. PROVIDE FIRE ALARM DUCT SMOKE DETECTOR WITHIN 5 FEET OF EACH DAMPER (UNLESS COVERED BY ANOTHER DETECTOR WITHIN 5 FEET).
   E. PROVIDE (ONE) 2-HOUR RATED FIRE ALARM CONTROL RELAY FOR EACH DAMPER IN CORRESPONDING HVAC UNIT(S) PER CODE REQUIREMENTS.
4. PROVIDE BOX COVER FUSIBLE DISCONNECT SWITCH (IN BUILDING INTERIOR IN LOCKABLE ENCLOSURE) FOR ALL HVAC, PLUMBING AND OTHER MOTOR LOAD EQUIPMENT MOTOR LOAD WHERE MORE THAN ONE UNIT IS CONNECTED TO A COMMON BRANCH CIRCUIT. TYPICAL EQUIPMENT TYPES INCLUDE, BUT ARE NOT LIMITED TO CABINET HEATERS, DAMPERS, EXHAUST FANS, FAN COIL UNITS, PUMPS, UNIT HEATERS, VAV BOXES, ETC.
5. DESIGNATED CABLING PATHWAYS (CONDUITS, CABLE TRAYS, PENETRATION SLEEVES, ETC.) SHALL BE RESERVED FOR DIV. 27 COMMUNICATIONS CABLING ONLY. DIV. 26 ELECTRICAL CABLING SHALL NOT BE ROUTED IN THE SAME PATH AS DIV. 28 CONTROLS, DIV. 28 CONTROLS, AND ARCHITECTURAL EQUIPMENT CABLING SHALL BE SUPPORTED AND SLEEVED BY OTHER INDEPENDENT PATHWAYS, HANGERS, AND SUPPORTS.
6. CONSOLIDATE ALL POWER SUPPLIES REQUIRED FOR ELECTRONIC DOOR HARDWARE (REF. SECTION 08 71 00) TO CENTRAL LOCATION(S) ADJACENT TO DESIGNATED ACCESS CONTROL EQUIPMENT LOCATION(S). CONNECT ALL POWER SUPPLIES TO DEDICATED LOCAL BRANCH CIRCUITS AS DESIGNATED.

ELECTRICAL KEYNOTES

P26	INSTALL ELEVATOR DISCONNECTS IN RECESSED ENCLOSURE MINIMUM 6" DEEP WITH DOOR AND LOCK. PROVIDE FLUSH MOUNT (FLANGED) FRONT FRAME, REMOVABLE DOOR WITH CONCEALED HINGE, QUARTER-TURN LATCH, FLUSH OR RECESSED HANDLE, AND LOCK. PAINT TO MATCH WALL. SQUARE CONCEPT SERIES CAT. NO. "ST-NSSHMF WITH OPTIONS, OR APPROVED EQUIVALENT. COORDINATE FACTORY OR FIELD PAINTING TO MATCH WALL. MOUNT BOTTOM OF ENCLOSURE 4'-0" AFF.
P14	PROVIDE 4 11/16" X EXTRA DEEP BOX WITH DOUBLE-GANG RING FOR TOUCHSCREEN BY OWNER'S TECHNOLOGY CONSULTANT. CONNECT TO 1 1/4" CONDUITS FOR AV CABLING PER DETAIL.
P15	COORDINATE EXACT LOCATION OF CEILING RECEPTACLE FOR PROJECTOR WITH OWNER'S TECHNOLOGY CONSULTANT PRIOR TO INSTALLATION.

KEYPLAN

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ELEMENTARY NEW ADDITION & REMODELING
DELTON KELLOGG SCHOOLS
DELTON, MICHIGAN

ISSUANCES
12.07.2021 BIDS & CONSTRUCTION
01.21.2022 ADDENDUM 002
03.16.2022 BULLETIN 002

DRAWN JPB
REVIEWED PRH
PROJECT NO. 5-4909

UNIT 'D' SECOND FLOOR POWER & COMMUNICATIONS PLAN

E2.2D

10 m
30 ft

Appendix G - Camera Schedule

	Interior Std. Resolution - Camera Type A	Interior High Resolution - Camera Type B	Multidirectional - DUAL - Camera Type C	Multidirectional - QUAD - Camera Type D	Exterior Standard Resolution - Camera Type E	Total All Cameras
Delton Kellogg Elementary	4	1	2	3	2	12
	4	**1**	**2**	**3**	**2**	**12**