

# **Specifications Manual**

# **Anchor Bay School District**

**Plumbing Upgrades** 

2023-019

05.08.2025

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## SECTION 00 1000 - ADVERTISEMENT FOR BIDS

PROJECT:	<u>Anchor Bay School District</u> <u>District Wide Plumbing Upgrades</u> Project Number 2025-019
OWNER:	Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064
PROPOSAL:	General Contractor Proposals Only Proposal- District Wide Plumbing Upgrades
ARCHITECT:	French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326 (248) 656-1377
DUE DATE:	Sealed proposals will be received until <b>Tuesday June 10, 2025, at 2:00 pm</b> local time (the "Due Date") by the Owner, at the Anchor Bay School District Maintenance Office, 51890 Washington, New Baltimore, MI 48047. At 2:00 pm local time, the Owner, or its designee, will open and read aloud each proposal received on or before the Due Date. Faxed proposals will not be accepted. The Owner will not accept or consider any proposals received after the Due Date and time.
	Label the sealed bid envelope as follows: Anchor Bay School District – Bids for District Wide Plumbing Upgrades
	Contractor Name, Address, Phone number
	<b>Contractor Name, Address, Phone number</b> Sealed Envelope must include 2 copies of the completed Form of Proposal (section 00 4000), 2 copies of the completed Supplemental Forms (section 008000), and a Bid Bond or certified check in the amount of 5% of the bid.
	Contractor Name, Address, Phone number Sealed Envelope must include 2 copies of the completed Form of Proposal (section 00 4000), 2 copies of the completed Supplemental Forms (section 008000), and a Bid Bond or certified check in the amount of 5% of the bid. Any questions should be directed to the Architect's office.
BID DOCUMENTS:	Contractor Name, Address, Phone number Sealed Envelope must include 2 copies of the completed Form of Proposal (section 00 4000), 2 copies of the completed Supplemental Forms (section 008000), and a Bid Bond or certified check in the amount of 5% of the bid. Any questions should be directed to the Architect's office. Bid documents will be transmitted via email only by the Architect to General Contractor's beginning on Wednesday May 14, 2025. Interested bidders must send an email to <u>craigw@frenchaia.com</u> requesting bid documents.
BID DOCUMENTS: PROPOSAL GUARANTEE:	<ul> <li>Contractor Name, Address, Phone number</li> <li>Sealed Envelope must include 2 copies of the completed Form of Proposal (section 00 4000), 2 copies of the completed Supplemental Forms (section 008000), and a Bid Bond or certified check in the amount of 5% of the bid.</li> <li>Any questions should be directed to the Architect's office.</li> <li>Bid documents will be transmitted via email only by the Architect to General Contractor's beginning on Wednesday May 14, 2025. Interested bidders must send an email to craigw@frenchaia.com requesting bid documents.</li> <li>A bid bond executed by a U.S. Treasury Listed Surety Company in favor of the Owner or a cashier's check in the amount of at least five percent (5%) of the base bid payable to Anchor Bay School District shall be submitted with each proposal. This bid bond shall accompany each proposal. Successful bidder will be required to furnish and pay for satisfactory Performance and Payment Bonds.</li> </ul>
BID DOCUMENTS: PROPOSAL GUARANTEE: FAMILIAL RELATIONSHIP DISCLOSURE:	<ul> <li>Contractor Name, Address, Phone number</li> <li>Sealed Envelope must include 2 copies of the completed Form of Proposal (section 00 4000), 2 copies of the completed Supplemental Forms (section 008000), and a Bid Bond or certified check in the amount of 5% of the bid.</li> <li>Any questions should be directed to the Architect's office.</li> <li>Bid documents will be transmitted via email only by the Architect to General Contractor's beginning on Wednesday May 14, 2025. Interested bidders must send an email to <u>craigw@frenchaia.com</u> requesting bid documents.</li> <li>A bid bond executed by a U.S. Treasury Listed Surety Company in favor of the Owner or a cashier's check in the amount of at least five percent (5%) of the base bid payable to Anchor Bay School District shall be submitted with each proposal. This bid bond shall accompany each proposal. Successful bidder will be required to furnish and pay for satisfactory Performance and Payment Bonds.</li> <li>All bidders must provide familial disclosure in compliance with MCL 380.1267 (P.A. 232 of 2004) and attach this information to the bid. The</li> </ul>

	bids shall be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the owner or any employee of the bidder and any member of the board of education or the superintendent of Anchor Bay School District. The Owner will not accept a bid that does not include this sworn and notarized disclosure statement.
IRAN ECONOMIC SANCTIONS ACT:	Bidders will also need to comply with Public Act 517 of 2012, an act to prohibit persons who have certain economic relationships with Iran from submitting bids on requests for proposals with this state, political subdivisions of this state, and other public entities; to require bidders for certain public contracts to submit certification of eligibility with the bid; to require reports; and to provide for sanctions for false certification. The bids shall be accompanied by a sworn and notarized statement certifying compliance with this act. The Owner will not accept a bid that does not include this sworn and notarized disclosure statement.
MICHIGAN PREVAILING WAGE ACT:	All contractors must comply with the Michigan Prevailing Wage for State Projects Act that became effective February 13, 2024.
BID QUESTIONS:	Bid questions should be directed to the Architect by email to <u>craigw@frenchaia.com</u> . The deadline for bid questions is 4:00 pm on Tuesday June 3, 2025
PRE-BID SITE VISITS:	Pre-bid site visits are encouraged, but <b>NOT MANDATORY.</b> Pre-bid virtual meeting is scheduled for Wednesday <b>May 28, 2025 at 9:00am.</b> Below is the log in information for the meeting.
	Microsoft Teams <u>Need help?</u> Join the meeting now Meeting ID: 287 130 559 571 5 Passcode: wQ2rz9ZD
	Dial in by phone <u>+1 972-581-9844,,933707140#</u> United States, Renner <u>Find a local number</u> Phone conference ID: 933 707 140#
	Site visits can be arranged by contacting the Architect by email for arrangements <a href="mailto:craigw@frenchaia.com">craigw@frenchaia.com</a>
RIGHTS RESERVED BY THE OWNER:	The Owner reserves the right to award the Contract to other than the low bidder, accept or reject any or all bids, in whole or in part, waive any informalities, accept any bid when, in the opinion of the Owner such action will serve the best interests of the Anchor Bay School District.
NON- WITHDRAWAL:	All bids shall be held open and irrevocable for a period of sixty (60) days from the Due Date.
SIGNED:	Mr. Phillip Jankowski, Superintendent of Schools Anchor Bay School District

END OF SECTION 00 1000

SECTION 00 2000 - INSTRUCTIONS TO BIDDERS

# **AIA** Document A701° – 2018

## Instructions to Bidders

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

Anchor Bay School District District Wide Plumbing Upgrades

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

Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

**THE ARCHITECT:** (*Name, legal status, address, and other information*)

French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326

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- 6 POST-BID INFORMATION
- 7 PERFORMANCE BOND AND PAYMENT BOND
- 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612<sup>™</sup>–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

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#### ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

#### ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

#### ARTICLE 3 BIDDING DOCUMENTS

#### § 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

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§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

#### § 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids. (Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

#### § 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

#### § 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

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§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

#### § 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

By email

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

#### ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

#### § 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security: (Insert the form and amount of bid security.)

Bid Bond, refer to Advertisement for Bids

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

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§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310<sup>TM</sup>, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning 60 days after the opening of Bids, withdraw its Bid and request the return of its bid security.

#### § 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below: (Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

Refer to Advertisement for Bids

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

#### § 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

## ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

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#### § 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

#### § 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

#### ARTICLE 6 POST-BID INFORMATION

#### § 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305<sup>TM</sup>, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

#### § 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

#### § 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

#### ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

#### § 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

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§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

#### § 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

#### ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101<sup>TM</sup> 2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.

(Insert the complete AIA Document number, including year, and Document title.)

- .2 AIA Document A101<sup>™</sup>-2017, Exhibit A, Insurance and Bonds, unless otherwise stated below. (Insert the complete AIA Document number, including year, and Document title.)
- AIA Document A201<sup>™</sup>–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
   (Insert the complete AIA Document number, including year, and Document title.)
- 4 Building Information Modeling Exhibit, if completed:
- .5 Drawings

Number Title Date

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.6	Specifications				
	Section	Title	Date	Pages	
.7	Addenda:				
	Number	Date	Pages		
.8	Other Exhibits: (Check all boxes that apply an	d include appropriate inf	formation identifying the	exhibit where require	d.)
	[ ] AIA Document E204 (Insert the date of the	™–2017, Sustainable Pro E204-2017.)	jects Exhibit, dated as in	dicated below:	
	[ ] The Sustainability Pla	in:			
	Title	Date	Pages		
	[] Supplementary and o	ther Conditions of the Con	ntract:		
	Document	Title	Date	Pages	

.9 Other documents listed below:

(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

## Additions and Deletions Report for

## AIA<sup>®</sup> Document A701<sup>®</sup> – 2018

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:30:33 ET on 05/09/2025.

PAGE 1

Anchor Bay School District District Wide Plumbing Upgrades

....

Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

...

French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326 PAGE 4

By email

....

Bid Bond, refer to Advertisement for Bids PAGE 5

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning <u>60</u> days after the opening of Bids, withdraw its Bid and request the return of its bid security.

•••

Refer to Advertisement for Bids

## **Certification of Document's Authenticity**

AIA<sup>®</sup> Document D401<sup>™</sup> – 2003

I, DAN JEROME, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 13:30:33 ET on 05/09/2025 under Order No. 4104247908 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A701™ - 2018, Instructions to Bidders, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)			
(Title)	《 法建立法律》 (4)		
(Dated)	AND DO T		
Duicu)			

#### SECTION 00 2500 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

#### SUMMARY

- A. The requirements of AIA DOCUMENT A701 1997 Edition INSTRUCTIONS TO BIDDERS, apply to this BID except as modified by the CONTRACT DOCUMENTS. References to the "Instructions to Bidders" hereinafter shall mean the above-titled document.
- B. Read and become familiar with, and cause each subcontractor to become familiar with all of these requirements which apply to and are binding on, all who are parties to, or are performing work under the BID.
- C. Any provisions of the Instructions to Bidders that are modified by the SUPPLEMENTARY INSTRUCTIONS TO BIDDERS are superseded to the extent of the modification only and the unmodified provisions shall remain in effect.

#### ARTICLE 2 – BIDDER'S REPRESENTATOINS

- A. 2.1, add the following to
- 2.1.5 Bids shall be based on products indicated in the documents. Bidder's proposed substitutions shall be detailed and separated from the Base Bid Price Proposal as the Bidder's <u>Voluntary Alternates</u>. Bidder's Voluntary Alternates WILL NOT form the Bidder's Base Bid Proposal Price. Provide information on a separate sheet stating cost differences, design differences and technical criteria interfacing with adjacent work.
- 2.1.6 Fair Employment Practice: The bidder, its sub-bidder and agents shall not discriminate against any employee or applicant for employment with respect to hire, tenure, terms, conditions or privileges of employment, because of race, sex, color, religion, national origin, age, height, weight or marital status.

#### ARTICLE 3 – BIDDING DOCUMENTS

- A. 3.1 COPIES, add the following:
- 3.1.5 The drawings and specifications are the property of the architect and must be returned in good order to the architect within ten days of the receiving of proposals.
- B. 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS, add the following:
- 3.2.4 Bidders and sub-bidders shall promptly notify the Architect of any ambiguity, inconsistency, or error discovered in examining the documents or site and location conditions so that the Architect may issue written clarifications to all bidders. Deadline for addendum response to inquiries is five days prior to the established bid due date. The Architect may issue Addenda before receipt of bids to modify the documents. In the space provided in the bid form, bidders shall acknowledge receipt of such addenda.
- C. 3.3 SUBSTITUTIONS, add the following:
- 3.3.5 Substitutions: The bidder shall furnish materials as specified and equipment by specified manufacturers, according to provisions of Specification Section 016000. The Bidder's submission of voluntary alternatives and substitutions shall NOT FORM the Base Bid Price of the proposal, but are listed therein for consideration by the Owner and Architect as proposed substitutions. If accepted, base bid price will be adjusted by the amount listed. (Attach additional sheets using bidder letterhead in the event that more space is required.)

#### ARTICLE 4 – ADMINISTRATION OF THE CONTRACT

- A. 4.1 PREPARATION OF BIDS, add the following:
- 4.1.8 Bids shall be submitted in duplicate on forms furnished. The copies shall be enclosed in a sealed opaque envelope. Bid security is required.
- B. 4.2 BID SECURITY, add the following:

4.2.4 Bid security shall be for 5% of the bid amount in the form of a certified check or satisfactory bid bond with a surety licensed to do business in the State of Michigan. Surety bond shall be an AIA Document A310 Bid Bond.

- C. 4.3 SUBMISSION OF BIDS, add the following:
- 4.3.5 Sealed bids will be received as noted in the Advertisement for Bids and Bid Form. Bids will be opened publicly and read aloud by the District or the Designee.
- 4.3.6 Taxes: The bid affirms that payment of applicable federal, state and local taxes are included therein.
- 4.3.7 Unit Prices: Unit prices shall govern authorized changes in the work and shall include all charges for supervision, overhead and profit and shall be applied to new quantities. The percentages stipulated under the "Overhead and Profit" paragraph below shall not be added to the unit prices stipulated under this article. Unit prices shall be used as a basis for determining cost or credit to the Owner, resulting from a change in work, per Article 7 of the Conditions of the Contract.
- D. 4.4 MODIFICATOIN OR WITHDRAWAL OF BID, add the following:
- 4.4.5 After receipt of bids, they shall remain firm for (sixty) 60 calendar days.

## ARTICLE 6 – POST-BID INFORMATION

- A. Paragraph 6.3.1, add the following:
  - .4 Cost Itemizations: The bidder shall submit reasonably accurate cost itemizations within seventy-two (72) hours after the time for receipt of bids, as required by the Owner. It is understood that cost itemizations will be required for the Owner's information and accounting purposes.
  - .5 Proposed Subcontractors: Within forty-eight (48) hours of the due date and the time of receiving of proposals, the apparent low bidder(s) (General Contractor[s]), shall submit to the Architect, his complete list of sub contractors for the combined work of all trades. The Contractors being considered for the contract award will be notified as soon as possible after the initial review of the proposals. Indicate proposed mechanical and electrical subcontractors on the Form of Proposal.

#### ARTICLE 7 – PERFORMANCE BOND AND PAYMENT BOND

- A. 7.1 BOND REQUIREMENTS, add the following to 7.1.1:
  - .1 Bonds must be secured with a surety licensed to do business in the State of Michigan.
- B. 7.1 BOND REQUIREMENTS, also add the following:

7.1.3 Bonds: Prior to the signing of the contract of which these conditions shall be a part, the general contractor shall furnish performance bonds and labor and material payment bonds in such form as the Owner may require. Such bonds must be with a recognized corporate surety company licensed

to do business in the State of Michigan. The general contractor's bond shall be for the full amount of the contract, including mechanical and electrical trades.

- 7.1.4 The accepted bidder shall be required to provide and pay for a satisfactory Performance Bond and Labor and Materials Payment Bond with a surety licensed to do business in the State of Michigan in the amount of 100% of the contract sum if over \$50,000.
  - .1 The Owner may request Performance Bond and Labor and Material Payment Bond for contracts less than \$50,000.00 and in this case, the cost would be reimbursed by the Owner.

END OF SECTION 00 2500

#### SECTION 00 4000 - FORM OF PROPOSAL

#### NAME OF BIDDER:

We, the undersigned, agree to enter into a contract with Anchor Bay School District (here after called the Owner) to provide all labor, material and equipment necessary for the combined work for the project as proposed in accordance with the drawings and specifications prepared by French Architecture.

#### PROJECT NAME:

#### Proposal A: District Wide Plumbing Upgrades:

1. Remove existing water coolers and/or drinking fountains, and install new water cooler / bottle filling station units complete throughout the district for the total sum of:

				Dollars
			\$	
<u>Itemiz</u>	ed Cost by B	uilding:		
1.	Ashley Elen	nentary School, for the sum of:		
				Dollars
			\$	
2.	Great Oaks	Elementary School, for the sum of:		
				Dollars
			\$	
3.	Lighthouse	Elementary School, for the sum of:		
				Dollars
				Donard
			\$	
4.	Lottie Eleme	entary School, for the sum of:		
				Dollars
			¢	
5.	Maconce El	ementary School, for the sum of:	Φ	
				Dollars
			\$	
4. 5.	Lottie Eleme	entary School, for the sum of:  ementary School, for the sum of:	\$ \$ \$	Dolla

	6.	Naldrett Elementar	y School,	for the	sum o	of:
--	----	--------------------	-----------	---------	-------	-----

				Dollars
			\$	
7.	Middle Scho	ool North, for the sum of:		
				Dollars
			\$	
8.	Middle Scho	ool South, for the sum of:		Dollars
			¢	
9	Anchor Bay	High School for the sum of:	Ψ	
0.	, alonoi Day			Dollars
			\$	
10.	Early Childh	ood Center, for the sum of:		
				Dollars
			\$	
11.	MacDonald	Early Childhood, for the sum of:		
				Dollars
			\$	
VOLUN unders Bid Prc from th	NTARY ALTE igned undersi posal Price. e Base Bid P	<b>RNATES:</b> The following voluntary alter tands and agrees that the following an Voluntary Alternates which may be ac roposal Price upon agreement with th	ernates are offered by the re nounts WILL NOT be includ ccepted by the Owner will e successful Bidder.	espective Bidder. The led as part of the Base be added or deducted
1				
ADD	/ DEDUCT:		Dollars. \$ _	
∠ חח∆			Dollare ¢	· · · · · · · · · · · · · · · · · · ·

00 4000 - 2 FORM OF PROPOSAL **TIME OF COMPLETION:** By submitting a bid the contractor indicates they understand the Project Schedule as described in specification Section 01 1000 Summary. Work to be substantially complete by December 31, 2025

**ADDENDA:** In the event that addenda have been received during the bidding covering changes to the drawings and specifications, the bidder shall include the following statement in his proposal:

The work described in the following addenda is included in this proposal:

Addendum No. \_\_\_\_\_ dated \_\_\_\_\_

Addendum No. \_\_\_\_\_ dated \_\_\_\_\_

**SITE VISITATION:** Each contractor is recommended to visit the site in order to familiarize themselves and confirm the scope of work outlined in the Summary.

Site visited: Yes Do Date \_\_\_\_\_

**MICHIGAN PREVAILING WAGE ACT:** All contractors must comply with the Michigan Prevailing Wage for State Projects Act that became effective February 13, 2024.

Prevailing Wage Rates Included: Yes

Acceptance of Proposal: In accepting this bid, it is understood that the right is reserved by the Owner to reject any or all bids, to waive irregularities in the bidding process or accept any bid, when in the opinion of the Owner, such action will serve the best interests of Anchor Bay School District.

FIRM NAME:		
ADDRESS:		
TELEPHONE:		
FAX NO.:		
SIGNATURE:		(signature is required)
TITLE:		
DATE:		
WITNESS BY:	(Sealed, if bid is by corporation)	

ANCHOR BAY SCHOOL DISTRICT DISTRICT WIDE PLUMBING UPGRADES PROJECT NO. 2025-019

00 4000 - 4 FORM OF PROPOSAL All Bidders must complete the following familial disclosure form in compliance with MCL 380.1267 (Public Act 232 of 2004) and attach this information to the bid.

By the attached sworn and notarized statement we are disclosing the following familial relationship(s) that exists between the owner or any employee of the bidder and any member of the Board, intermediate school board, or board of directors or the superintendent of the school district, intermediate superintendent of the intermediate school district, or chief executive officer of the public school academy. (School District / Name) will not accept a Bid that

does not include this sworn and notarized disclosure statement.

Disclose any familial relationship and complete the form below in its entirety:

The following are familial relationships as described above (provide employee name, family contact name, family contact position, and familial relationship or NONE.)

PRINT: Company Name	Phone
Street Address	
City / State / Zip	
Company Officer	Title
Officer's Signature	Date
STATE OF MICHIGAN ) ) SS	
COUNTY OF     ) On thisday of, 20_, before me a Notary Put	lic in and for said county, personally
appearedagent of the said firm _	and who
acknowledged the same to be his free act and deed as such agent.	
Notary Public Expiration	Date
Seal Imprint:	
END OF SECTION 00 4000	

SECTION 00 6000 - OWNER/CONTRACTOR AGREEMENT

# **AIA** Document A101° – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

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

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

Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

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

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

**ABS** - District Wide Plumbing Upgrades

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

French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326

The Owner and Contractor agree as follows.

#### **ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®-2017. General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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#### TABLE OF ARTICLES

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

#### EXHIBIT A INSURANCE AND BONDS

#### ARTICLE 1 THE CONTRACT DOCUMENTS

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

#### THE WORK OF THIS CONTRACT **ARTICLE 2**

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

#### DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION **ARTICLE 3**

§ 3.1 The date of commencement of the Work shall be: (Check one of the following boxes.)

- [X] The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner. []
- [ ] Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

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

#### § 3.3 Substantial Completion

Init.

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§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

[] Not later than () calendar days from the date of commencement of the Work.

[X] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

**Substantial Completion Date** 

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

#### ARTICLE 4 CONTRACT SUM

Portion of Work

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

#### § 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Price

**Price** 

§ 4.3 Allowances, if any, included in the Contract Sum: (Identify each allowance.)

Item

Item

§ 4.4 Unit prices, if any: (Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

**Price** 

Item

Units and Limitations

Price per Unit (\$0.00)

3

**Conditions for Acceptance** 

§ 4.5 Liquidated damages, if any: (Insert terms and conditions for liquidated damages, if any.)

Init. I

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#### ARTICLE 5 PAYMENTS

#### § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the first day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the fifteenth day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than sixty (60) days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201<sup>TM</sup>–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- That portion of the Contract Sum properly allocable to completed Work; .1
- That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably .2 stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201-2017;
- Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, .3 unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201-2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

#### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

10%

Init. 1

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§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

#### § 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201-2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

#### § 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

#### § 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. (Insert rate of interest agreed upon, if any.)

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## ARTICLE 6 DISPUTE RESOLUTION

#### § 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201-2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker. (If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

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#### § 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201-2017, the method of binding dispute resolution shall be as follows: (Check the appropriate box.)

- [X] Arbitration pursuant to Section 15.4 of AIA Document A201-2017
- [ ] Litigation in a court of competent jurisdiction
- []] Other (Specify)

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

#### ARTICLE 7 **TERMINATION OR SUSPENSION**

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows: (Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

#### ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative: (Name, address, email address, and other information)

Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

§ 8.3 The Contractor's representative: (Name, address, email address, and other information)

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§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

#### § 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101<sup>™</sup>–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101<sup>TM</sup>-2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with a building information modeling exhibit, if completed, or as otherwise set forth below: (If other than in accordance with a building information modeling exhibit, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

#### ARTICLE 9 **ENUMERATION OF CONTRACT DOCUMENTS**

§ 9.1 This Agreement is comprised of the following documents:

- AIA Document A101<sup>™</sup>\_2017, Standard Form of Agreement Between Owner and Contractor .1
- .2 AIA Document A101<sup>TM</sup>-2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201<sup>TM</sup>-2017, General Conditions of the Contract for Construction
- .4 Building information modeling exhibit, dated as indicated below: (Insert the date of the building information modeling exhibit incorporated into this Agreement.)
- .5 Drawings

Number	Title	Date	
Refer to Cover Sheet for List of			
Drawings			
Specifications			
Section	Title	Date	Pages
Refer to Specifications Table of			
Contents			
Addenda, if any:			
Number	Date	Pages	

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

8. Other Exhibits:

> (Check all boxes that apply and include appropriate information identifying the exhibit where required.)

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[] AIA Document E204<sup>™</sup>–2017, Sustainable Projects Exhibit, dated as indicated below: (Insert the date of the E204-2017 incorporated into this Agreement.)

[] The Sustainability Plan:

Title		Date	Pages	
] Supplementary and other Conditions of the Contract:			ct:	
Docur	ment	Title	Date	Pages

.9 Other documents, if any, listed below:

> (List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201<sup>TM</sup>\_2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

**OWNER** (Signature)

**CONTRACTOR** (Signature)

(Printed name and title)

(Printed name and title)

## Additions and Deletions Report for

# AIA<sup>®</sup> Document A101<sup>®</sup> – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

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Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

....

ABS - District Wide Plumbing Upgrades

French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326 PAGE 2

[ <u>X</u> ] The date of this Agreement. PAGE 3

[X] By the following date: PAGE 4

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the first\_day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the fifteenth day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than sixty ( 60 ) days after the Architect receives the Application for Payment.

...

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> [X] Arbitration pursuant to Section 15.4 of AIA Document A201-2017

Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064 PAGE 7

Refer to Cover Sheet for List of

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Drawings

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Refer to Specifications Table of Contents
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AIA<sup>®</sup> Document D401<sup>™</sup> – 2003

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(Signed)		
(Title)		
(Dated)	<u> </u>	

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SECTION 00 7000 - GENERAL CONDITIONS

# **AIA** Document A201° – 2017

## **General Conditions of the Contract for Construction**

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

Anchor Bay School District District Wide Plumbing Upgrades

THE OWNER: (Name, legal status and address)

Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

THE ARCHITECT: (Name, legal status and address)

French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326

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This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503<sup>™</sup>, Guide for Supplementary Conditions.

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#### 14 **TERMINATION OR SUSPENSION OF THE CONTRACT**

15 **CLAIMS AND DISPUTES** 

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## ARTICLE 1 GENERAL PROVISIONS

#### § 1.1 Basic Definitions

#### § 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

## § 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

#### § 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

#### § 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

#### § 1.1.5 The Drawings

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

#### § 1.1.6 The Specifications

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

#### § 1.1.7 Instruments of Service

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

#### § 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

## § 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

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

## § 1.3 Capitalization

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

#### § 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

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

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

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

#### § 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

## § 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

## § 1.8 Building Information Models Use and Reliance

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

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#### ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

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

## § 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

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

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

#### § 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

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

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

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

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

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

## § 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

#### § 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

#### ARTICLE 3 CONTRACTOR

## § 3.1 General

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§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

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

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

#### § 3.2 Review of Contract Documents and Field Conditions by Contractor

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These

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obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

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

## § 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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

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

## § 3.4 Labor and Materials

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

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

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

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#### § 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

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

#### § 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

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

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

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

#### § 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

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

#### § 3.8 Allowances

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

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- § 3.8.2 Unless otherwise provided in the Contract Documents,
  - allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all .1 required taxes, less applicable trade discounts;
  - .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
  - .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

#### § 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

#### § 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

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

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

#### § 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

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#### § 3.12 Shop Drawings, Product Data and Samples

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

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

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

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

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

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

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

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

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

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional,

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whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

#### § 3.13 Use of Site

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

#### § 3.14 Cutting and Patching

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

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

#### § 3.15 Cleaning Up

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

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

#### § 3.16 Access to Work

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

## § 3.17 Royalties, Patents and Copyrights

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

#### § 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work,

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provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

#### **ARTICLE 4** ARCHITECT

## § 4.1 General

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

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

#### § 4.2 Administration of the Contract

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

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

#### § 4.2.4 Communications

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The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the

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Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

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

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

#### ARTICLE 5 SUBCONTRACTORS

#### § 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

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§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

#### § 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

#### § 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

#### § 5.4 Contingent Assignment of Subcontracts

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

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

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

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

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

#### ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

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

## § 6.2 Mutual Responsibility

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

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

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

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

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#### § 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

#### ARTICLE 7 CHANGES IN THE WORK

#### § 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

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

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

## § 7.2 Change Orders

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

- The change in the Work; .1
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

#### § 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

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

- Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to .1 permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- As provided in Section 7.3.4. .4

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
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- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

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

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

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

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

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

## § 7.4 Minor Changes in the Work

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

#### ARTICLE 8 TIME

## § 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

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#### § 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

#### § 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

## ARTICLE 9 PAYMENTS AND COMPLETION

#### § 9.1 Contract Sum

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

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

#### § 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

## § 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

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

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

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

## § 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

## § 9.5 Decisions to Withhold Certification

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

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

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- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

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

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

#### § 9.6 Progress Payments

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§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

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

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

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

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

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#### § 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

#### § 9.8 Substantial Completion

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

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

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

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

## § 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

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

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

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#### § 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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

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

- liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled; .1
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

#### ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

## § 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

## § 10.2 Safety of Persons and Property

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

employees on the Work and other persons who may be affected thereby; .1

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- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

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

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

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

## § 10.2.8 Injury or Damage to Person or Property

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

## § 10.3 Hazardous Materials and Substances

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

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities

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proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

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

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

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

## § 10.4 Emergencies

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In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

#### ARTICLE 11 **INSURANCE AND BONDS**

## § 11.1 Contractor's Insurance and Bonds

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

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

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

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the

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procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

## § 11.2 Owner's Insurance

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

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

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

#### § 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

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

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

#### §11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

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

#### UNCOVERING AND CORRECTION OF WORK **ARTICLE 12**

## § 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

## § 12.2 Correction of Work

## § 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

## § 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

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

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

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

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

#### § 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

#### ARTICLE 13 **MISCELLANEOUS PROVISIONS**

#### § 13.1 Governing Law

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

## § 13.2 Successors and Assigns

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

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

## § 13.3 Rights and Remedies

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

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

#### § 13.4 Tests and Inspections

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§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

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approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

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

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

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

#### § 13.5 Interest

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Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

#### ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

#### § 14.1 Termination by the Contractor

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

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

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

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

#### § 14.2 Termination by the Owner for Cause

- § 14.2.1 The Owner may terminate the Contract if the Contractor
  - .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
  - .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
  - repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful .3 orders of a public authority; or
  - .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

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

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

#### § 14.3 Suspension by the Owner for Convenience

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

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

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

### § 14.4 Termination by the Owner for Convenience

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

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

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
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§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

#### ARTICLE 15 **CLAIMS AND DISPUTES**

§ 15.1 Claims

#### § 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

#### § 15.1.2 Time Limits on Claims

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

#### § 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

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

#### § 15.1.4 Continuing Contract Performance

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

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

#### § 15.1.5 Claims for Additional Cost

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

#### § 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

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#### § 15.1.7 Waiver of Claims for Consequential Damages

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

- damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, .1 business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

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

#### § 15.2 Initial Decision

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

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

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

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

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

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

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

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

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

#### § 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

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

#### § 15.4 Arbitration

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

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

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

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

#### § 15.4.4 Consolidation or Joinder

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

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

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

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PAGE 1

Anchor Bay School District **District Wide Plumbing Upgrades** 

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Anchor Bay School District 5201 County Line Road Casco Twp. MI 48064

...

French 2851 High Meadow Circle, Suite 100 Auburn Hills, MI 48326

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(Signed)		
(Title)		
(Dated)		

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#### **SECTION 00 7500 - SUPPLEMENTARY GENERAL CONDITIONS**

#### SUMMARY

- A. The requirements of AIA DOCUMENT A201 2007 Edition GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, apply to this CONTRACT except as modified by the CONTRACT DOCUMENTS. References to the "General Conditions" hereinafter shall mean the above-titled document.
- B. Read and become familiar with, and cause each subcontractor to become familiar with all of these requirements which apply to and are binding on, all who are parties to, or are performing work under the CONTRACT.
- C. Make certain that all subcontractors have access to and are made aware of the provisions of the DIVISION 01 SECTIONS in addition to the trade SECTIONS of the SPECIFICATIONS and other applicable CONTRACT DOCUMENTS.
- D. Any provisions of the General Conditions that are modified by the SUPPLEMENTARY CONDITIONS or the DIVISION 01 SECTIONS are superseded to the extent of the modification only and the unmodified provisions shall remain in effect.

#### ARTICLE 1 – GENERAL PROVISIONS

- A. 1.1 BASIC DEFINITIONS:
  - 1. Paragraph .1.5 the DRAWINGS: AT THE END OF 1.1.5, add:

The Drawings that are partially diagrammatic shall not be scaled for rough-in measurements nor serve as shop drawings.

- 2. After Paragraph 1.1.8, add:
  - 1.1.8 FURNISH

Means the procurement or fabrication of materials, equipment, or components, or the performance of services to the extent indicated or specified. Where used with respect to materials, equipment, or components, the term shall include delivery to the Project Site but is not intended to include the installation of the item, either temporary or final.

1.1.9 INSTALL

Means the placement of materials, equipment, or components, including the receiving, unloading, transporting, storage, and installing, and the performance of such testing and finish work as is compatible with the degree of installation specified.

1.1.10 PROJECT SITE

The area where the actual construction takes place and the limited adjacent areas as indicated in the Contract Documents.

1.1.11 PROVIDE

Means to furnish and install, complete and in place, including all accessories, finishes, tests, and services as required to render the item so specified completely ready for use.

- B. 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS:
  - 1. To 1.2.3, add:
    - a. In the case of an inconsistency between the Drawings and the Specifications, the better quality or greater quantity of Work shall be provided unless directed otherwise by the Architect.
  - 2. Add:

1.2.4 No guarantee of the accuracy of location of existing work, including piping, sewers, wiring, ducts, structural members and the like shown on the Drawings, or shown on reference drawings of the existing building can be given. Nor shall the Architect-Engineer assume any responsibility for the accurate location of such work. The Contractor shall have complete responsibility for the reasonable protection of existing construction whether underground, aboveground, exposed or concealed and whether shown accurately or not shown on the Drawings. The Contractor shall verify the location of all existing construction before proceeding with the Work.

1.2.5 The Documents contemplate a complete project wherein all items and systems are complete within themselves and in proper quantities and all items and systems are connected properly to other items and/or systems as required to make the project complete and without discontinuities.

1.2.6 Where any item may through oversight be omitted from schedules, Drawings or Specifications or for which no symbol or other instruction or other designation is given for identification, such items in the absence of any definite instructions from the Architect shall be furnished and installed to correspond with adjacent items or similar items for which information is given.

### ARTICLE 2 – OWNER

- A. 2.1 GENERAL, add:
  - 2.1.3 The term "Owner's Representative" shall mean the person designated by the OWNER as having authority to act within the rights and responsibilities of the OWNER according to the terms of the Contract Documents.
- B. 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER:
  - 1. To 2.2.3, add:

.1 Property lines (when adjacent to the WORK), location ties, and elevations of all structures to be built under this Contract are shown on the Drawings. Elevations shown for various parts of the Work are taken from an established or assumed bench mark datum, as indicated. In case of conflict therein, notify the Architect in writing prior to commencing Work.

.2 The Contractor shall avoid damage to or removal of existing benchmarks

and monuments wherever possible. If such damage or removal is necessitated by operations of this Contract, the Contractor shall repair damaged items, and where feasible, replace or relocate such items, all at no cost to the owner.

The Contractor shall be held responsible to see that such replaced or repaired topographical items are accurate and correct.

.3 The Contractor shall accurately lay out the Work in conformance with indicated locations. He shall establish temporary benchmarks, stakes, and other markers as may be required for the WORK.

#### ARTICLE 3 – CONTRACTOR

#### A. 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR:

- 1. To 3.2.2 add:
  - .1 The Contractor's report to the Architect regarding discrepancies shall be in writing.
  - .2 See also the requirement from the Owner regarding Asbestos, under Article 2. B.
- 2. To 3.2.4 add:

.1 Any work performed by the Contractor or a Subcontractor without a Written Order or Agreement shall be deemed a part of the work required by the Contract. The Contractor or a Subcontractor shall not be entitled to receive any additional compensation for extra work unless the Owner, by its consent in writing, agrees to pay therefore prior to the commencement of the extra work; the price of alterations or extras to be done shall be fixed or agreed to in writing. The Contractor or a Subcontractor cannot make alterations unless an agreement of the Owner and the Architect to do such work is obtained in writing. If extra work is deemed necessary by the Contractor, or a Subcontractor, immediate notice thereof shall be given to the Owner and the Architect in writing.

#### B. 3.4 LABOR AND MATERIALS:

1. To 3.4.1 add:

Make all necessary arrangements for, and provide and maintain temporary construction services referred to in 3.4.1 and described in DIVISION 01 SECTIONS as necessary for the work of all workmen employed on the project, until completion and acceptance of the project by the Owner, or until no longer required. When no longer required, discontinue the service and remove all paraphernalia. Bear all costs, except as otherwise specified under each particular system described.

2. Add:

3.4.4 All materials and workmanship shall be first-class in every respect and, unless otherwise specified, all products shall be new and of the latest design. Should any disputes arise as to the quality and fitness of workmanship, products or items, the decisions shall rest strictly with the Architect, and shall be based upon the requirements of the Contract Documents. The Contractor shall, if required by the Architect, furnish evidence as to kind and quality of materials.

3.4.5 In general, it is the intent of the Specifications to permit the use of products of approved manufacture so long as they are fully consistent, in the opinion of the Architect, with the quality and performance requirements of the Project. The conditions and procedures governing proposed substitutions are specified in Section 016000.

3.4.6 The provisions of standards and specifications of technical and trade organizations, underwriting agencies and similar groups that are referred to in these SPECIFICATIONS, govern the quality of products and workmanship to the extent referenced. Where products or work is specified to be in conformity with Standard Specifications of well-know or recognized technical and trade organizations, but no tests are specifically stipulated in connection therewith, the Contractor shall, on request, furnish any test or certification required by the Architect to shown that the proposed products meet with the applicable specifications, all at no cost to the Owner.

3.4.7 Products containing asbestos shall neither be proposed nor used on this Project. However, if the Contractor becomes aware of a product that contains asbestos that was inadvertently specified, the Contractor shall alert the Architect, in writing, and the Architect will direct the Contractor on an alternate product. The Contractor will be required to sign a statement that he will only install asbestos free products.

#### C. 3.7 PERMITS, FEES AND NOTICES, add:

3.7.5 Provide products and execute the work, including tests and inspections, in accordance with Government laws and ordinances and referenced codes and standards compliance with the applicable provisions of the Federal, State and Local current as of the issue date of this Specification, except where requirements of the contract documents modify portions of such governing laws, ordinances, codes and standards.

#### D. 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, TO 3.12.5 add:

Submit shop drawings, product data and samples per Division 01 3300 "Submittal Procedures."

#### E. 3.15 CLEANING UP, add:

3.15.3 Remove all hazardous substances related to construction work to a state-licensed hazardous substance disposal site using closed and sealed containers. Remove all combustible debris to a state-licensed solid waste disposal site. No burning of debris or rubbish will be permitted at the site. OWNER is responsible for removal and disposal of existing hazardous substances.

### F. Add paragraph 3.19 EQUAL OPPURTUNITY as follows:

3.19.1 The Contractor and all Subcontractors shall maintain policies of employment as follows:

.1 Do not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. Take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their

race, religion, color, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

.2 In all solicitations or advertisements for employees state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.

#### ARTICLE 4 – ADMINISTRATION OF THE CONTRACT

- A. 4.1 ARCHITECT, add:
  - 4.1.4 The Architect for this Project is French Associates, Inc. The term Architect is synonymous with the term ARCHITECT-ENGINEER (A/E).

#### ARTICLE 5 – SUBCONTRACTORS

- A. 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK; to 5.2.1, Add:
  - .1 The above list shall be submitted within ten days of notice of award of Contract.
  - .2 The submission of such list shall be construed to mean that the Contractor has solicited bids from, and has selected, subject to approval, qualified, responsible persons, contractors, or entities fully capable of producing the particular end results required to provide a complete facility for the Owner.

#### ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

- A. 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS, add:
  - 6.1.5 When Owner-furnished or Separate-Contractor-furnished equipment or material is to be utilized by the Contractor at the construction site, jointly inventory such equipment or material with the Party involved, mutually agreeing as to condition and quantities. Upon completion of the inventory, accept the equipment or material and give the Party involved a signed receipt. The Contractor shall then be responsible for the equipment or material, its protection from damage and availability for installation.

In the absence of such a joint inventory, the Contractor assumes full responsibility for such equipment or material when it comes into his possession. If the Owner or Separate Contractor fails to furnish the equipment or material within the time specified or if none is specified within a reasonable time, an equitable adjustment shall be made pursuant to provisions of the changes clause of the General Conditions.

.1 Such equipment or material will be furnished to the Contractor by any one or all of the following means. Demurrage charges resulting from delay on the part of the Contractor in any of these procedures shall be paid by the Contractor.

- a. Stored on site.
- b. Supplied FOB site, commercial carrier, for unloading at the site by the Contractor
- c. Shipped to points designed by the Contractor upon prior agreement with the Party involve.

.2 Shop drawings and material lists for all Owner-furnished or separate-Contractor-furnished equipment or material will be furnished to Contractor. The shop drawings will indicate the specific characteristics of such equipment or material but will not necessarily show the exact methods of installation in the work of this Contract. Prepare such additional drawings as are necessary to indicate the installation and anchorage conditions of all such equipment or material.

.3 Install Owner-furnished or Separate-Contractor-furnished equipment or material in accordance with the provisions of the applicable Section of these Specifications and the manufacturer's instructions.

.4 At all times protect and preserve all materials, supplies and equipment of every description including property which may be Owner-furnished or Separate-Contractor-furnished and all work performed. All reasonable requests of the Architect-Engineer to enclose or special-protect such property shall be complied with. If, as determined by the Architect-Engineer, material, equipment, supplies and work performed are not adequately protected by the Contractor, such property may be protected by the Owner and the cost thereof may be charged to the Contractor or deducted from any payment due to him.

.5 In the process of handling and installing this equipment, the Contractor shall comply with the following requirements:

- a. Do not drag equipment into place.
- b. Use appropriate protection over floors when using metal skid plates or wooden skids on completed floor surfaces.
- c. Use load-spreading rubber-tired rollers or dollies on finished floors; do not use steel rollers or wheels.
- d. If helicopters are used, make all arrangements, obtain all approvals and necessary insurance, schedule the work to preclude interference with any other activity or structure, and observe all safety precautions necessary.
- e. Do not exceed load requirements on access flooring.
- f. All damage to finished floors or floor finishing shall be repaired by the Contractor at no cost to the Owner.

#### ARTICLE 7 - CHANGES IN THE WORK

#### A. 7.3 CONSTRUCTION CHANGE DIRECTIVES, Add PARAGRAPH 7.3.8.1:

"The allowable markups for overhead and profit for Changes in the Work shall not exceed the following percentages. These markups shall be calculated on the net amount of a change, and shall include administration and all costs incidental to the changed work."

	ADD	DEDUCT
Work by Own Forces	10%	0%
Work by Subcontractor	5%	0%
Materials and Equipment	5%	0%

#### ARTICLE 8 – TIME

FRENCH ASSOCIATES, INC. architects planners interiors

#### A. 8.3 DELAYS AND EXTENSIONS OF TIME

1. At the end of the 8.3.1, add:

However, minor modifications in Contract Time resulting from adjustments in the Project construction schedule shall not be deemed cause for action under this Subparagraph 8.3.1.

#### ARTICLE 10 – PROTECTION OF PERSONS AND PROPERTY

- A. 10.1 SAFETY PRECAUTIONS AND PROGRAMS, add:
  - 10.1.2 The Contractor shall submit to the Owner a detailed, written report of each accident that occurs at the site.
  - 10.1.3 The Contractor represents that he is conversant with the occupational safety and health regulations for construction promulgated and in force in the state where Work is performed, and agrees to comply with all such regulations applicable to the performance of the Work. The Contractor accepts the affirmative duty of enforcing those regulations, and shall promptly advise the Owner of any investigation by "Safety Officers" at the Contractor's work place at the job site and of the outcome of any such inspection. The Contractor assumes exclusive responsibility for, and agrees to indemnify the Owner against all consequences of any violations of those regulations by the Contractor, or any Subcontractor, including the payment of any fine, penalty and interest assessed in connection therewith and any court costs and attorneys' fees incurred by the Owner.
- B. 10.2 SAFETY OF PERSONS AND PROPERTY, add:
  - 1. TO 10.2.1 add:

.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary, the Contractor shall give the Owner reasonable advance notice.

#### ARTICLE 11 – INSURANCE AND BONDS

- A. 11.1 CONTRACTOR'S LIABIITY INSURANCE:
  - 1. To 11.1.1, add:

The Owner and Architect shall be added as additionally insured parties to the Contractor's insurance policy and shall be covered by the insurance to the same extent as the Contractor. Contractor will furnish copies of said policy prior to starting any work on site or upon signing of contract, whichever is earlier.

2. Replace 11.1.2 with:

11.1.2 Coverage, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment, except for termination of coverage required to be maintained after final payment. The insurance required by Subparagraph 11.1.1 shall be in accordance with the following provisions:

.1 Workmen's Compensation Insurance: The Contractor shall obtain and maintain, during the life of the Contract, Workmen's Compensation Insurance, as

required by the State in which the work is located, to insure against liability imposed upon an employer under the State Compensation Law. In case any Work is sublet, the Contractor shall require each Subcontractor similarly to provide Workmen's Compensation Insurance unless covered by the Contractor's insurance.

.2 Employers Liability Insurance: The Contractor shall also take out and maintain during the life of the Contract such insurance in amounts as to adequately protect him from damage claims, in addition to those covered by this regular Compensation insurance, resulting from injuries to any of his employees.

.3 Section 11.1 of the General Conditions shall be amended to include the following provisions:

Contractor will maintain the following insurance: Broad Form Comprehensive General Liability, (including Operations and Premises Liability, Independent Contractors Protective Liability (maintained in effect for a period of three years after the date of final payment), Personal Injury Liability, Broad Form Property Damage Liability endorsement, Explosion, Collapse and Underground Liability endorsement, Blanket Contractual Liability Insurance) Comprehensive Auto Liability, and Workers' Compensation coverage, all of which shall be written on an occurrence basis for not less than the following limits of liability, or any limits required by law whichever is greater:

- a. Workmen's Compensation Statutory/Employers Liability \$500,000.00
- b. Comprehensive General Liability Per Person (Occurrence)/Aggregate

Bodily & Personal Injury \$1,000,000/\$2,000,000 Property Damage \$1,000,000/\$2,000,000 Aggregate

c. Automobile Liability - Per Person (Occurrence)/Aggregate

Bodily Injury \$1,000,000 Property Damage \$1,000,000/\$2,000,000

.4 All insurance shall be carried with insurance companies authorized to do business in the State in which the Work is to be performed. The Contractor shall furnish the owner with satisfactory evidence of insurance coverage provided before entering upon the Owner's Premises or upon signing of contract, whichever is earlier. Evidence of insurance shall include the phone number, name, and address of the insurance agent and includes original signature of Contractor's agent.

3. In 11.1.3 replace the second sentence with:

These certificates and the insurance policies shall contain a provision for thirty days prior written notice to the Owner of cancellation or material change in the insurance.

4. Add Article 11.1.4.1: "Contractor shall require such insurance company to add to the policy the following clause: "The insurance afforded to the Additional Insured is primary insurance. If the Additional Insured have other insurance which is applicable to the loss on an excess or contingent basis, the amount of the company's liability under this policy shall not be reduced by the existence of such other insurance."

### ARTICLE 12 - CORRECTION OF WORK

#### A. 12.2.2 AFTER SUBSTANTIAL COMPLETION; add:

.4 The guarantee period for the heating, ventilating and air conditioning systems shall be of such duration as to include a minimum of one complete heating season and one complete cooling season, from Certificate of Occupancy.

.5 Where special warranty is specified, the Contractor, as a condition precedent to final payment, shall submit to the Architect, the warranty in triplicate on 8-1/2-inch by 11-inch paper in the form specified in .5 below.

.6 Special Warranties are designated by the heading "Guarantee" in the respective technical sections of the Specifications.

.7 Responsibility for the securing, verifying, recording, transmitting to the Architect and all other actions regarding the specified warranties rests with the Contractor. The Architect will not accept transmittals of warranties from parties other than the Contractor.

.8 Form of SPECIAL WARRANTY; See Exhibit 1 "FORM OF SPECIAL GUARANTEE" bound at the end of SECTION 01740 as Appendix A.

#### ARTICLE 13 – MISCELLANEOUS PROVISIONS

- A. 13.4 RIGHTS AND REMEDIES, add:
  - 13.4.3 Failure by the successful Contractor to execute the Contract and file acceptable bonds as provided herein within ten calendar days after he has receive the Contract for execution, shall be just cause for annulment of the award and the forfeiture of any bidding security to the Owner. If the successful Contractor refuses or fails to execute the Contract within the stipulated time, the Owner may award the Contract to another responsible Contractor Bidder.
  - 13.4.4 The Owner also encourages alternate products, but all contractors must supply pricing on as specified products. Equal products must be approved and shown as an alternate, clearly showing the cost as an add or deduct for showing alternate.
- B. 13.6 INTEREST, delete heading and contents in its entirety.

END OF SECTION 00 7500

#### SECTION 00 8000.01 FAMILIAL DISCLOSURE STATEMENT

All Bidders must complete the following familial disclosure form in compliance with MCL 380.1267 (Public Act 232 of 2004) and attach this information to the bid.

By the attached sworn and notarized statement we are disclosing the following familial relationship(s) that exists between the owner or any employee of the bidder and any member of the Board, intermediate school board, or board of directors or the superintendent of the school district, intermediate superintendent of the intermediate school district, or chief executive officer of the public school academy. (School District / Name) \_\_\_\_\_\_ will not accept a Bid that

does not include this sworn and notarized disclosure statement.

Disclose any familial relationship and complete the form below in its entirety:

The following are familial relationships as described above (provide employee name, family contact name, family contact position, and familial relationship or NONE.)

Seal Imprint:

## SECTION 00 8000.02 CERTIFICATION OF COMPLIANCE WITH IRAN ECONOMIC SANCTIONS ACT (PA 517 of 2012)

All Bidders must complete this certification form to indicate compliance with Public Act 517 of 2012, an act to prohibit persons who have certain economic relationships with Iran from submitting bids on requests for proposals with this state, political subdivisions of this state, and other public entities; to require bidders for certain public contracts to submit certification of eligibility with the bid; to require reports; and to provide for sanctions for false certification. This statement must be submitted with the Form of Proposal.

By submitting this sworn and notarized statement with our Form of Proposal, we are certifying to:

(School District / Name)		
that we are in compliance with	Public Act 517 of 2012.	
PRINT:		
Company Name		
Street Address		
City / State / Zip		
Company Officer		
Title		
Officer's Signature		Date
State of Michigan		
	(County)	
		(Signature
Notary Public:		(Printed Name
Subscribed and sworn to befor	e me this (day) of	f (month) of year 20
My commission expires:		
Seal Imprint:		

#### SECTION 00 8000.03 NON-DISCRIMINATION IN EMPLOYMEN T

TO:	
	Owner

The undersigned currently holds contract(s) with \_\_\_\_\_\_ (Owner Name) involving funds or credit of the U.S. Government of (a) subcontract(s) with a prime contractor holding such contract(s).

You are advised that under the provisions of the above contract(s) or subcontract(s) and in accordance with Executive Order 11246, dated September 24, 1965, the undersigned is obliged not to discriminate against any employee or applicant for employment because of race, color, creed, or national origin. This obligation not to discriminate in employment includes, but is not limited to the following:

HIRING, PLACEMENT, UPGRADING, TRANSFER, DEMOTION, RECRUITMENT, ADVERTISING, SOLICITATION FOR EMPLOYMENT, TRAINING DURING EMPLOYMENT, RATES OF PAY OR OTHER FORMS OF COMPENSATION, SELECTION FOR TRAINING INCLUDING, APPRENTICESHIP, LAYOFF OR TERMINATION.

This notice is furnished you pursuant to the provisions of the above contract(s) or subcontract(s) and Executive Order 11245.

Copies of this notice will be posted by the undersigned in conspicuous places available to employees or applicants for employment.

PRINT: Company Name	Phone
Street Address	
City / State / Zip	
Company Officer	Title
Officer's Signature	Date

#### SECTION 00 8000.04 CONTRACTOR'S CERTIFICATION OF ASBESTOS-FREE PRODUCT AND INSTALLATION

It is hereby understood and agreed that no products/materials containing asbestos, including Chrysotile, Amosite, Crocidolite, Tremolite Asbestos, Anthopyllite Asbestos, Actinolite Asbestos or any combination of these materials that have been chemically treated and/or altered shall be installed or introduced into the building by the Contractor or his employees, agents, subcontractors or other individuals or entities over whom the Contractor has control. The Contractor shall be required to sign this certification statement ensuring that all products or materials installed or introduced into a building will be asbestos-free.

The Contractor shall also be required to furnish certified statements from the manufacturers of supplied materials used during construction verifying their products to be asbestos-free in accordance with the previous paragraph.

Architect's Name:			Pr	oject Number	
Project's	City	/	State	/	Zip:
Project's Address:					
Project's Name:		·····	<u> </u>		

#### CONTRACTOR'S CERTIFICATION

We (I) certify and will direct that all products and materials that will be and/or have been installed or introduced into the above named Project shall be asbestos-free (or less than one-percent (1%) asbestos by weight).

PRINT: Company Name	Phone
Street Address	
Company Officer	Title
Officer's Signature	Date

#### SECTION 00 8000.05 NON-COLLUSIVE AFFIDAVIT (Prime Bidder)

State of \_\_\_\_\_

County of \_\_\_\_\_

N	2	m	•
1 1	a		•

\_\_\_\_\_ being first duly sworn, deposes and says:

That he is (a partner or officer, etc.) of the firm of \_\_\_\_\_\_\_ the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Owner, \_\_\_\_\_ (Owner, \_\_\_\_\_\_ any person interested in the proposed contract; and that all statements in said proposal or bid are true. (Owner) or

PRINT: Company Name	Phone
Street Address	
City / State / Zip	
Company Officer	Title
Officer's Signature	Date
BIDDER: if the Bidder is Individual; PARTNER: if Bidder is Partnership; OFFICER: if the Bidder is a Corporation.	
Subscribed and sworn to before me this (day) of	(month) of year 20
My commission expires:	
Seal Imprint:	

SECTION 00 8500 - FILE TRANSFER AGREEMENT



## FILE TRANSFER AGREEMENT

Project: Anchor Bay School District District Wide Plumbing Upgrades

Firm:

Type of Work:

# AGREEMENT FOR THE TRANSFER OF INSTRUMENTS OF SERVICE

As per your request, and upon approval by our client, we will provide electronic files for your convenience and use in preparing for your specific work related to the above referenced project, subject to the following terms and conditions:

### Hard Copy Instruments

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflicts exist. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

#### **Electronic Data Transfer**

Our electronic files are compatible with: *AutoCAD Release 2017*. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications. Other software programs may have been used in the development of the drawings and design of the project. French Associates, Inc. (FA) will not release any of this associated software for use with the electronic files.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and / or involvement from each electronic display.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in preparing your work for the above referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub-consultants that may arise out of or in connection with your use of the electronic files.



Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.

#### **Computer Viruses**

Computer viruses are a real and serious threat to all computer users. FA takes steps to detect and eliminate computer viruses from our system and the diskettes that are made available to our clients and colleagues. Since computer viruses can attach at any time, FA strongly urges its clients and colleagues to back-up their important data frequently and to take steps to detect viruses from any files that we make available. Even though FA takes prudent steps to prevent the attachment of computer viruses to its electronic media, we cannot guarantee this.

If an electronic file is requested and provided by FA, it is specifically understood and agreed that use of electronic media provided by FA is done so at the sole risk of the user and the user is responsible for testing for and eliminating computer viruses from any files provided by FA.

#### Files Available

This file transfer agreement applies to Architectural base plan files only (floor plans, ceiling plans and roof plans). Building elevations, sections and detail files are NOT available to contractors. Structural, electrical, mechanical, civil and landscape drawings are the property of our consultants. Arrangements to obtain electronic files of these drawings must be made with them. French Associates makes no commitment that our consultants will make these files available.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either expressed or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

Architect:	Agreed by:
French	(signing below indicates that we have read and agree to both pages of this agreement)
Signature	Signature
Print Name	Print Name
Title	Title
Date: Click or tap to enter a date.	Date: Click or tap to enter a date.



## FILE TRANSFER AGREEMENT

Project: XXXX-XXX

Firm:

Type of Work:

# AGREEMENT FOR THE TRANSFER OF INSTRUMENTS OF SERVICE

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These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflicts exist. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

#### **Electronic Data Transfer**

Our electronic files are compatible with: *AutoCAD Release 2017*. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications. Other software programs may have been used in the development of the drawings and design of the project. French Associates, Inc. (FA) will not release any of this associated software for use with the electronic files.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and / or involvement from each electronic display.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in preparing your work for the above referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub-consultants that may arise out of or in connection with your use of the electronic files.



Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.

#### **Computer Viruses**

Computer viruses are a real and serious threat to all computer users. FA takes steps to detect and eliminate computer viruses from our system and the diskettes that are made available to our clients and colleagues. Since computer viruses can attach at any time, FA strongly urges its clients and colleagues to back-up their important data frequently and to take steps to detect viruses from any files that we make available. Even though FA takes prudent steps to prevent the attachment of computer viruses to its electronic media, we cannot guarantee this.

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#### **Files Available**

This file transfer agreement applies to Architectural base plan files only (floor plans, ceiling plans and roof plans). Building elevations, sections and detail files are NOT available to contractors. Structural, electrical, mechanical, civil and landscape drawings are the property of our consultants. Arrangements to obtain electronic files of these drawings must be made with them. French Associates makes no commitment that our consultants will make these files available.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either expressed or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

Architect:	Agreed by:
French	(signing below indicates that we have read and agree to both pages of this agreement)
Signature	Signature
Print Name	Print Name
Title	Title
Date: Click or tap to enter a date.	Date: Click or tap to enter a date.

#### SECTION 01 1000 - SUMMARY

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Work covered by the Contract Documents.
  - 2. Owner-furnished products.
  - 3. Use of premises.
  - 4. Owner's occupancy requirements.
  - 5. Work restrictions.
  - 6. Specification formats and conventions.
- B. Related Sections include the following:

#### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: This project will be awarded as one contract.1. District Wide Plumbing Upgrades
- B. Owner: Anchor Bay School District
- C. Architect: French

#### 1.4 USE OF PREMISES

- A. General: Each Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.
- A. Use of Site: Refer to Attached site diagrams. Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
- B. Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
- C. Schedule of Work:
  - 1. Contract award is planned for June 26, 2025
  - 2. Work at all School Buildings can be performed starting June 30, 2025
  - 3. Work must be coordinated with the Owner to minimize disruption of daily school and custodial activities.
  - 4. Working weekends or holidays can be arranged with prior approval and coordinated with the Architect and Owner.

- 5. Work must be substantially complete by December 31, 2025.
- D. Site Access: Access to the site will be very limited during school operating hours.
  - 1. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public. a. All areas of the building will be in operation during construction.
    - a. All areas of the building will be in operation during construct
    - b. The Contractor will be required to take steps to maintain the building operation at all times. This includes coordination of deliveries and delivery times and storage of materials on site.
  - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

### 1.5 OWNER'S OCCUPANCY REQUIREMENTS

- A. Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits, unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
  - 2. Provide not less than five (5) calendar days notice to Owner of activities that will affect Owner's operations.

#### 1.6 WORK RESTRICTIONS

- A. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than five days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner's written permission.

#### 1.7 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.
  - 1. Section Identification: The Specifications use Section numbers and titles to help crossreferencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
  - 2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

- 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
- 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
  - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1000

#### SECTION 01 1400 - WORK RESTRICTIONS

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
  - 1. Limits: Confine constructions operations to rooms getting new flooring and corridors directly outside those rooms.
  - 2. Owner Occupancy: Allow for Owner occupancy of site.
  - 3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of Existing Building: Maintain existing building in a weather-tight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

#### 1.3 OCCUPANCY REQUIREMENTS

- A. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
  - 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
  - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
  - 3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
  - 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

#### 1.4 ASBESTOS-FREE PRODUCT INSTALLATION

- A. Contractor shall be required to sign a certification statement ensuring that all products or materials installed or introduced into a building will be asbestos-free.
- B. No products/materials containing asbestos, including chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos or any combination of these materials that have been chemically treated and/or altered shall be installed or introduced by the contractor or his employees, agents, subcontractors or other individuals or entities over whom the contractor has control.
- C. Contractor shall also be required to furnish certified statements from the manufacturers of supplied materials used during construction verifying their products to be asbestos-free in accordance with the previous paragraph.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1400

### SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
  - 1. Construction Change Directives. (CCD)
  - 2. Change Orders. (CO)
- B. Related Sections include, but not limited to the following:
  - 1. Division 01 6000 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

#### 1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on "Architect's Supplemental Instructions."

#### 1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within twenty (20) calendar days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and

finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.
  - 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  - 6. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- 1.5 CHANGE ORDER PROCEDURES (C0)
  - A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

### 1.6 CONSTRUCTION CHANGE DIRECTIVE (CCD)

- A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 01 2600

#### SECTION 01 2900 - PAYMENT PROCEDURES

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
  - 1. Division 01 2600 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

#### 1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

#### 1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with Continuation Sheets.
    - b. Submittals Schedule.
    - c. Contractor's Construction Schedule.
  - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven (7) calendar days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.

- d. Contractor's name and address.
- e. Date of submittal.
- 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
  - a. Related Specification Section or Division.
  - b. Description of the Work.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.
  - e. Name of supplier.
  - f. Change Orders (numbers) that affect value.
  - g. Dollar value.
- Percentage of the Contract Sum to nearest, adjusted to total 100 percent.
  Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 4. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 5. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
- 6. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
  - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit one certified electronic copy of the Application for Payment to Architect by a method ensuring receipt within 24 hours. Include one waivers of lien and similar attachments if required.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
  - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  - 2. When an application shows completion of an item, submit final or full waivers.
  - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  - 4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
  - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  - 2. When an application shows completion of an item, submit final or full waivers.
  - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  - 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
  - 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
  - 6. Contractor/Construction Manager: Sworn Statements of waivers.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
  - 1. List of subcontractors.
  - 2. Schedule of Values.
  - 3. Contractor's Construction Schedule (preliminary if not final).
  - 4. Products list.
  - 5. Schedule of unit prices.
  - 6. Submittals Schedule (preliminary if not final).
  - 7. List of Contractor's staff assignments.
  - 8. List of Contractor's principal consultants.
  - 9. Copies of building permits.
  - 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  - 11. Initial progress report.
  - 12. Report of preconstruction conference.
  - 13. Certificates of insurance and insurance policies.
  - 14. Performance and payment bonds.
  - 15. Data needed to acquire Owner's insurance.
  - 16. Initial settlement survey and damage report if required.

- I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
  - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  - 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
  - 1. Evidence of completion of Project closeout requirements.
  - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  - 3. Updated final statement, accounting for final changes to the Contract Sum.
  - 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  - 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  - 6. AIA Document G707, "Consent of Surety to Final Payment."
  - 7. Evidence that claims have been settled.
  - 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
  - 9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2900

# SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Coordination Drawings.
  - 2. Administrative and supervisory personnel.
  - 3. Project meetings.
  - 4. Requests for Interpretation (RFI). Form attached at end of Specification Section.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections include the following:
  - 1. Division 01 3200 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
  - 2. Division 01 7700 Section "Closeout Procedures" for coordinating closeout of the Contract.

#### 1.3 DEFINITIONS

A. RFI (Request for Interpretation): Request from Contractors, Fabricators and others seeking interpretation or clarification of the Contract Documents.

#### 1.4 COORDINATION

- A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
  - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  - 1. Preparation of Contractor's Construction Schedule.
  - 2. Preparation of the Schedule of Values.
  - 3. Installation and removal of temporary facilities and controls.
  - 4. Delivery and processing of submittals.
  - 5. Progress meetings.
  - 6. Preinstallation conferences.
  - 7. Project closeout activities.
  - 8. Startup and adjustment of systems.
  - 9. Project closeout activities.
  - 10. Agency Inspections.

## 1.5 SUBMITTALS

- A. COORDINATION DRAWINGS: Prepare Coordination Drawings with other trade contractors to coordinate maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
  - 1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
- B. Key Personnel Names: Within fifteen (15) calendar days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
  - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.
  - 2. List names of code officials and other agency personnel.

## 1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
  - 1. Include special personnel required for coordination of operations with other contractors.

## 1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

- 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
- 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within five (5) calendar days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner, Construction Manager, and Architect, but no later than fifteen (15) calendar days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
  - 1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Critical work sequencing and long-lead items.
    - c. Designation of key personnel and their duties.
    - d. Procedures for processing field decisions and Change Orders (C.O.).
    - e. Procedures for RFI (Request for Interpretation).
    - f. Procedures for processing Applications for Payment.
    - g. Procedure for processing (CCD) "Construction Change Directive".
    - h. Submittal procedures.
    - i. Preparation of Record Documents.
    - j. Use of the premises and existing building.
    - k. Work restrictions.
    - I. Owner's occupancy requirements.
    - m. Responsibility for temporary facilities and controls.
    - n. Construction waste management and recycling.
    - o. Parking availability.
    - p. Equipment deliveries and priorities.
    - q. First aid.
    - r. Security.
    - s. Progress cleaning.
    - t. Working hours.
  - 3. Minutes: General Contractor will record and distribute meeting minutes.
- C. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
  - 1. Attendees: In addition to representatives of Owner, Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction

behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- b. Review present and future needs of each entity present, including the following:
  - 1) Interface requirements.
  - 2) Sequence of operations.
  - 3) Status of submittals.
  - 4) Deliveries.
  - 5) Off-site fabrication.
  - 6) Access.
  - 7) Site utilization.
  - 8) Temporary facilities and controls.
  - 9) Work hours.
  - 10) Hazards and risks.
  - 11) Progress cleaning.
  - 12) Quality and work standards.
  - 13) Status of correction of deficient items.
  - 14) Field observations.
  - 15) Request for Interpretation (RFI).
  - 16) Status of proposal requests.
  - 17) Status of Construction Change Directive (CCD).
  - 18) Status of Change Orders (CO).
  - 19) Pending claims and disputes.
  - 20) Documentation of information for payment requests.
- 3. Minutes: the General Contractor will record the meeting minutes.
- 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
  - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- D. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
  - 1. Attendees: In addition to representatives of Owner, Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions

are required to ensure that current and subsequent activities will be completed within the Contract Time.

- b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
- c. Review present and future needs of each contractor present, including the following:
  - 1) Interface requirements.
  - 2) Sequence of operations.
  - 3) Status of submittals.
  - 4) Deliveries.
  - 5) Off-site fabrication.
  - 6) Access.
  - 7) Site utilization.
  - 8) Temporary facilities and controls.
  - 9) Work hours.
  - 10) Hazards and risks.
  - 11) Progress cleaning.
  - 12) Quality and work standards.
  - 13) Change Orders (CO).
- 3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

#### 1.8 REQUESTS FOR INTERPRETATION (RFI)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
  - 1. RFI shall originate with Contractor. RFI submitted by entities other than Contractor will be returned with no response.
  - 2. Coordinate and submit RFI in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
  - 1. Project name.
  - 2. Date.
  - 3. Name of Contractor.
  - 4. Name of Architect and Construction Manager.
  - 5. RFI number, numbered sequentially.
  - 6. Specification Section number and title and related paragraphs, as appropriate.
  - 7. Drawing number and detail references, as appropriate.
  - 8. Field dimensions and conditions, as appropriate.
  - 9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  - 10. Contractor's signature.
  - 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

- a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- C. Software-Generated RFI: Software-generated form with substantially the same content as indicated above.
  - 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven (7) calendar days for Architect's response for each RFI.
  - 1. The following RFI will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for coordination information already indicated in the Contract Documents.
    - d. Requests for adjustments in the Contract Time or the Contract Sum.
    - e. Requests for interpretation of Architect's actions on submittals.
    - f. Incomplete RFI or RFI with numerous errors.
  - 2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
  - 3. Architect's action on RFI that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within five (5) calendar days of receipt of the RFI response.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within five (5) calendar days if Contractor disagrees with response.

PART 2 - PRODUCTS (Not Used)

# PART 3 - EXECUTION

3.1 A. Copy of (RFI) "Request for Interpretation" form attached at end of Section.

END OF SECTION 01 3100

# **REQUEST FOR INTERPRETATION (R.F.I.)**

	Page 1 of	
Project Name	R.F.I. Number	
Architect's Project Number	Date Issued	
To French Associates	From CM/GC	
SubContr. Requesting Info	SubContr. Ref. #	
Peterenco		
Specification Section	Drawings #	-
Interpretation Request		
Requested by	Date	
A/E Response	Date Received	
Response by A/E	Date	
Signed by French Assoc:	Date Returned:	
Copies 10 Const. Manager or Gen. Contr		
Architect	Struct. Consultant	
Mech. Consultant	Elect. Consultant	
Owner	Others	

# SECTION 01 3300 - SUBMITTAL PROCEDURES

# PART 1 - GENERAL

# RELATED DOCUMENTS

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

## SUMMARY

This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

- 1. Shop drawings and Samples
- 2. Product data submittal procedures.
- 3. Shop Drawing and Samples Transmittal Form.
- 4. Contract Close-out Deliverables Form.

Related Sections include the following:

- 1. Division 01 2900 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
- 3. Division 01 7700 Section "Closeout Procedures" for submitting warranties.
- 4. Division 01 7700 Section "Closeout Procedures" for submitting Record Drawings, Record Specifications, and Record Product Data.
- 5. Division 01 7700 Section "Closeout Procedures" for submitting operation and maintenance manual.

#### SUBMITTAL PROCEDURES

Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

- 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
- 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
  - a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

Submittals Schedule: Comply with requirements in Division 01 3200 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

- Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow fifteen (15) calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Resubmittal Review: Allow seven (7) calendar days for review of each resubmittal.
  - 3. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow seven (7) calendar days for initial review of each submittal.
  - 4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow seven (7) calendar days for review of each submittal. Submittal will be returned to Construction Manager, through the Architect, before being returned to Contractor.
- Shop Drawing Submittal Procedures: The procedures and quantity of drawings, catalog cuts, samples and other information for submittal are minimum. The Contractor and Architect will finalize format at the Project Kick-Off Meeting. The direct submittal delivery procedures to affected parties is intended to expedite the review turn-around period by the Architect and his Consultants.

Information shall be submitted directly in the following manner: Note: Architect's Consultants will review information and deliver to Architect for distribution.

Identification: Place a permanent label or title block on each submittal for identification.

- 1. Indicate name of firm or entity that prepared each submittal on label or title block.
- 2. Provide a space approximately 4 x 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.
- 3. Include the following information on label for processing and recording action taken:
  - b. Project name.
  - c. Date.

i.

- d. Name and address of Architect and Construction Manager.
- e. Name and address of Contractor.
- f. Name and address of subcontractor.
- g. Name and address of supplier.
- h. Name of manufacturer.
  - Submittal number or other unique identifier, including revision identifier.
    - 1) Submittal number shall use whole numbers for the first submittal.
      - Example: Architectural = A-001
    - 2) Resubmittals for the same item shall be identified with the original first whole submittal number and the resubmitted number following the decimal point.

Example: Architectural = A-001.1 (first resubmittal)

A-001.2 (second resubmittal) and etc.

- j. Number and title of appropriate Specification Section.
- k. Drawing number and detail references, as appropriate.
- I. Location(s) where product is to be installed, as appropriate.
- m. Other necessary identification.

- Deviations: Highlight and encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- Transmittal: Package each submittal item individually and appropriately for transmittal and handling. Transmit each submittal using the official transmittal form. Architect received submittals from sources other than Construction Manager or General Contractor will be discarded without review.
  - 1. Transmittal Form: **Use** submittal form included at the end of Specification.
  - 2. Form:
    - n. Project name.
    - o. Date.
    - p. Destination (To:).
    - q. Source (From:).
    - r. Names of subcontractor, manufacturer, and supplier.
    - s. Category and type of submittal.
    - t. Submittal purpose and description.
    - u. Specification Section number and title.
    - v. Drawing number and detail references, as appropriate.
    - w. Transmittal number, numbered consecutively.
    - x. Submittal and transmittal distribution record.
    - y. Remarks.
    - z. Signature of transmitter.

Resubmittals: Make resubmittals in same form as initial submittal.

- 1. Note date and content of previous submittal.
- 2 Note date and content of revision in label or title block and clearly indicate extent of revision.
- 3. Resubmit submittals until they are marked with Architect's "REVIEWED FOR CONSTRUCTION" or Architect's "REVIEWED AS NOTED" stamp and Construction Manager's action stamp.
- Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- Use for Construction: Use only final submittals with mark indicating Architect's "REVIEWED FOR CONSTRUCTION" or "REVIEWED AS NOTED" stamp and Construction Manager's or General Contractor's release for construction stamp.
  - 1. DO NOT USE Shop Drawings noted "XRR = RETURNED FOR CORRECTIONS" for construction or fabrication.

## CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

- General: At Contractor's written request, copies of Architect's CAD files may be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
  - 1. Request "Electronic File Transfer Agreement Form", refer to Division 00 Section 008500.

PART 2 - PRODUCTS

# ACTION SUBMITTALS

General: Prepare and submit Action Submittals required by individual Specification Sections.

- 1. Submit electronic submittals directly to extranet specifically established for Project.
- Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Standard color charts.
    - e. Manufacturer's catalog cuts.
    - f. Wiring diagrams showing factory-installed wiring.
    - g. Printed performance curves.
    - h. Operational range diagrams.
    - i. Mill reports.
    - j. Standard product operating and maintenance manuals.
    - k. Compliance with specified referenced standards.
    - I. Testing by recognized testing agency.
    - m. Application of testing agency labels and seals.
    - n. Notation of coordination requirements.
  - 4. Submit Product Data concurrent with Samples.

Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

- 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
  - o. Dimensions.
  - p. Identification of products.
  - q. Fabrication and installation drawings.
  - r. Roughing-in and setting diagrams.
  - s. Wiring diagrams showing field-installed wiring, power, signal, and control wiring.
  - t. Shop work manufacturing instructions.
  - u. Templates and patterns.
  - v. Schedules.
  - w. Design calculations.
  - x. Compliance with specified standards.
  - y. Notation of coordination requirements.
  - z. Notation of dimensions established by field measurement.
  - aa. Relationship to adjoining construction clearly indicated.
  - bb. Seal and signature of professional engineer if specified.
  - cc. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

- Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm)
- Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
  - 1. Transmit samples that contain multiple, related components such as accessories together in one submittal package.
  - 2. Identification: Attach label on unexposed side of Samples that includes the following:
    - dd. Generic description of Sample.
    - ee. Product name and name of manufacturer.
    - ff. Sample source.
    - gg. Number and title of appropriate Specification Section.
  - 2. Disposition: Maintain sets of approved Samples at Project site, available for qualitycontrol comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  - 3. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - Number of Samples: Submit one (1) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager, will return submittal with options selected.
  - 4. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit number of samples as indicated in Part 1.4 "Submittal Procedures".
      - 1. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      - 2. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

- Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  - 1. Type of product. Include unique identifier for each product.
  - 2. Room name, room number, space and location.
- Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation" for Construction Manager's action.
- Submittals Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.
  - 4. Number of Copies: Submit two (2) copies of subcontractor list, unless otherwise indicated.

## INFORMATIONAL SUBMITTALS

General: Prepare and submit Informational Submittals required by other Specification Sections.

- 1. Number of Copies: Submit one copy of each submittal, unless otherwise indicated. Architect will not return copies.
- 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- 3. Test and Inspection Reports: Comply with requirements in Division 01 4000 Section "Quality Requirements."

Coordination Drawings: Comply with requirements specified in Division 01 3100 Section "Project Management and Coordination."

Contractor's Construction Schedule: Comply with requirements in Division 01 3200 Section "Construction Progress Documentation."

Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

- Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 7700 Section "Closeout Procedures" for Operation and Maintenance Data."
- Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
  - 1. Preparation of substrates.
  - 2. Required substrate tolerances.
  - 3. Sequence of installation or erection.
  - 4. Required installation tolerances.
  - 5. Required adjustments.
  - 6. Recommendations for cleaning and protection.
- Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles and term of the coverage.
- Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect, except as required in "Action Submittals'Article."
  - 1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

## PART 3 - EXECUTION

## CONTRACTOR'S REVIEW

- Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with Contractor's review approval stamp before submitting to Architect.
- Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

#### ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

- General: Architect will not review submittals that do not bear Construction Manager's or General Contractor's review approval stamp and will return them without action.
- Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action to be taken.
- Informational Submittals: Architect will review each submittal and will return it to the Construction Manager or General Contractor with review comments for their review.
- Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

## 3.3 ARCHITECT'S FORMS

- A. Shop Drawings and Samples Transmittal form, attached at end of Section.
- B. Contract Close-out Deliverables form, attached at end of Section.

END OF SECTION 01 3300



FA Submittal No.

Project Name:				Architect	's Projects No.: Contr. Proj. No.			Submittal Date:	
FROM: CM/CONTR. NAM	IE		TO:	DATE:	QTY:	COMMENTS:			
CM/CONTR. NAM CM/CONTR. ADD	IE RESS					-		RECEIVED STAMP	HERE
SIGNATURE:				PICK-UP					
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FROM:			TO:	DATE:	QTY:	COMMENTS:			
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Spec Section	CM / Contr.	Qty.	Description:(Drawings, Data	a, Cat, Samples)		Sub-Contractor Name.	Supplier / Manufa	acturer Name	Architect Review
(not Bid Ctgy.)	Submittal No.			,					Code
							-		
Contractor(s) certifie	s that the above subm	itted info	rmation has been reviewed in detail and comply with t	he Contract Documer	nts, except as indi	cated, and is submitted to the	Architect Review	RC = Reviewed for Cons	struction
Documents. Contrac	tor(s) assumes respon	nsibility fo	or all information and comments indicated in Shop Dra	wings.	tom compliance w	an requirements of the Contract	Code Legend	XRR = Returned for Cor	rections
			· · · · · ·				-		

# SECTION 01 4000 - QUALITY REQUIREMENTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other qualityassurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
  - 1. Division 01 7329 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
  - 2. Divisions 02 0000 through 33 0000 Sections for specific test and inspection requirements.

#### 1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.

- C. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- D. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- E. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- F. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

## 1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.

# 1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Test and inspection results and an interpretation of test results.
  - 9. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 10. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 11. Name and signature of laboratory inspector.
  - 12. Recommendations on retesting and reinspecting.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee

payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

## 1.7 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner may engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Architect, Construction Manager, and Contractors promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, Construction Manager, with copy to Contractors and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

# PART 3 - EXECUTION

## 3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

#### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  - 2. Comply with the Contract Document requirements for Division 01 7329 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 4000

## SECTION 01 4200 - REFERENCES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

#### 1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

## 1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
  - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA)	(800) 872-2253
	Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov	(202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(888) 293-6498 (202) 512-1530
CRD	Handbook for Concrete and Cement Available from Army Corps of Engineers Waterways Experiment Station www.wes.army.mil	(601) 634-2355
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257
DSCC	Defense Supply Center Columbus (See FS)	
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257
	Available from General Services Administration www.fss.gsa.gov	(202) 501-1021
	Available from National Institute of Building Sciences www.nibs.org	(202) 289-7800
FTMS	Federal Test Method Standard (See FS)	

UFAS	Uniform Federal Accessibility Standards
	Available from Access Board
	www.access-board.gov

(800) 872-2253 (202) 272-0080

## 1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AGA	American Gas Association www.aga.org	(202) 824-7000
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400

AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America www.alca.org	(800) 395-2522 (703) 736-9666
ALSC	American Lumber Standard Committee, Incorporated www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers	(800) 527-4723 (404) 636-8400
	www.asinae.org	(+0+) 000-0400
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (212) 591-7722
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association www.awpa.com	(334) 874-9800

AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	(423) 892-0137
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIMA	EIFS Industry Members Association www.eima.com	(800) 294-3462 (770) 968-7945
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
FM	Factory Mutual System (Now FMG)	
FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	(401) 275-3000
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426

LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864 (847) 577-7200
MFMA	Maple Flooring Manufacturers Association www.maplefloor.org	(847) 480-9138
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	(312) 644-6610
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NAGWS	National Association for Girls and Women in Sport	(800) 213-7193
	www.aahperd.org/nagws/	ext. 455
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) www.ncaa.org	(317) 917-6222
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NFHS	National Federation of State High School Associations www.nfhs.org	(317) 972-6900
NFPA	NFPA (National Fire Protection Association) www.nfpa.org	(800) 344-3555 (617) 770-3000
NGA	National Glass Association www.glass.org	(703) 442-4890
NHLA	National Hardwood Lumber Association	(800) 933-0318

	www.natlhardwood.org	(901) 377-1818
NOFMA	National Oak Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSSGA	National Stone, Sand & Gravel Association www.nssga.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. www.ntma.com	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWWDA	National Wood Window and Door Association (Now WDMA)	
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PTI	Post-Tensioning Institute www.post-tensioning.org	(602) 870-7540
SAE	SAE International www.sae.org	(724) 776-4841
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SEI	Structural Engineering Institute www.seinstitute.com	(800) 548-2723 (703) 295-6195
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIA	Security Industry Association www.siaonline.org	(703) 683-2075
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980

SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
ТСА	Tile Council of America, Inc. www.tileusa.com	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
UL	Underwriters Laboratories Inc. www.ul.com	(800) 285-4476 (847) 272-8800
USGBC	U.S. Green Building Council www.usgbc.org	(202) 828-7422
USITT	United States Institute for Theatre Technology, Inc. www.usitt.org	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (847) 299-5200
WIC	Woodwork Institute of California (Now WI)	

- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.
- BOCABOCA International, Inc.<br/>(See ICC)CABOCouncil of American Building Officials<br/>(See ICC)
- IAPMO International Association of Plumbing and Mechanical Officials www.iapmo.org

(909) 472-4100

(800) 423-6587

(562) 699-0543

- ICBO International Conference of Building Officials (See ICC)
- ICBO ES ICBO Evaluation Service, Inc. (See ICC-ES)
- ICC International Code Council (703) 931-4533 (Formerly: CABO - Council of American Building Officials) www.iccsafe.org
- ICC-ES ICC Evaluation Service, Inc. www.icc-es.org
- NES National Evaluation Service (See ICC-ES)
- SBCCI Southern Building Code Congress International, Inc. (See ICC)

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-6816
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOD	Department of Defense www.dodssp.daps.mil	(215) 697-6257
DOE	Department of Energy www.eren.doe.gov	(202) 586-9220
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(202) 366-4000
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
GSA	General Services Administration www.gsa.gov	(800) 488-3111 (202) 501-1888
HUD	Department of Housing and Urban Development	(202) 708-1112

	www.hud.gov	
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
MBC	Michigan Building Code	?????
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	Office of Public Health and Science http://phs.os.dhhs.gov	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board www.nas.edu/trb	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 4200

## SECTION 01 6000 - PRODUCT REQUIREMENTS - SUBSTITUTIONS AND OPTIONS

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
  - 1. Substitutions Request Procedures.
  - 2. Product Substitutions and Options.
  - 3. Substitution Request Form. (included at end of this Specification Section)
- B. Related Sections include the following:

List below only products and procedures that the reader might expect to find in this Section but are specified elsewhere.

- 1. Division 01 2300 Section "Alternates" for products selected under an alternate.
- 2. Division 01 4200 Section "References" for applicable industry standards for products specified.
- 3. Division 01 7700 Section "Closeout Procedures" for submitting warranties for contract closeout.
- 4. Divisions 02 0000 through 33 0000 Sections for specific requirements for warranties on products and installations specified to be warranted.

## 1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

- B. Substitutions (after selection of successful bidder): Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
- D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

## 1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
  - 1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
  - 2. Form: Tabulate information for each product under the following column headings:
    - a. Specification Section number and title.
    - b. Generic name used in the Contract Documents.
    - c. Proprietary name, model number, and similar designations.
    - d. Manufacturer's name and address.
    - e. Supplier's name and address.
    - f. Installer's name and address.
    - g. Projected delivery date or time span of delivery period.
    - h. Identification of items that require early submittal approval for scheduled delivery date.
  - 3. Initial Submittal: Within thirty (30) calendar days after date of "Notice to Proceed," or date of commencement of work, submit three (3) copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
    - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
  - Completed List: Within sixty (60) calendar days after date of "Notice to Proceed," submit three (3) copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
  - 5. Architect's Action: Architect will respond in writing to Contractor within fifteen (15) calendar days of receipt of completed product list. Architect's response will include a list of unacceptable product selections without explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.
- B. Substitution Requests Procedures: Submit three (3) copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

- 1. Substitution Request must be proposed and submitted only to the Construction Manager or General Contractor. Substitution Requests must not be sent directly to the Architect.
- 2. Substitution Request Form: Use form provided at end of Section.
- 3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
  - a. Statement indicating why specified material or product cannot be provided.
  - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and other separate Contractors, that will be necessary to accommodate proposed substitution.
  - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  - Product Data, including drawings and descriptions of products and fabrication and installation procedures.
  - e. Samples, where applicable or requested.
  - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
  - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
  - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
  - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
  - j. Cost information, including a proposal of change, if any, in the Contract Sum.
  - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
  - I. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 4. Architect/Engineer shall have right to reject proposed substitution without explanation.
- 5. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within Seven (7) calendar days of receipt of a request for substitution. Architect will notify General Contractor or Construction Manager of acceptance or rejection of proposed substitution within Ten (10) calendar days of receipt of request, or Seven (7) calendar days of receipt of additional information or documentation, whichever is later.
  - a. Should the Architect not respond within Twelve (12) calendar days of the dated date of Request, the proposed substitution is considered REJECTED.
  - b. Form of Acceptance: Construction Change Directive (CCD).
  - c. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.
  - d. Owner or Architect <u>does not</u> have to give any reason for rejection of substitutions.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 3300 Section "Submittal Procedures." Show compliance with requirements.

## 1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

#### 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
  - 1. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 2. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
  - 4. Store products to allow for inspection and measurement of quantity or counting of units.
  - 5. Store materials in a manner that will not endanger Project structure.
  - 6. Store products that are subject to damage by the elements, under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation.
  - 7. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  - 8. Protect stored products from damage.
- B. Owner's Storage Area: Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

#### 1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
  - 3. Refer to Divisions 02 0000 through Divisions 33 0000 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in the following:
- 1. Division 01 3300 Section "Submittal Procedures."
- 2. Division 01 7700 Section "Closeout Procedures."

## PART 2 - PRODUCTS

#### 2.1 PRODUCT OPTIONS and SUBSTITUTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  - 4. Where products are accompanied by the term "as selected," Architect will make selection.
  - 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
  - 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
  - 7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product acceptable to the Architect.
- B. Product Selection Procedures: Procedures for product selection include the following:
  - 1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.
    - a. The product is a single source item. Substitutions will not be considered.
  - 2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
    - a. Substitutions may be considered.
  - 3. Manufacturer's Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
    - a. Substitutions will not be considered.
  - 4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
    - a. Substitutions by non-listed manufacturers will not be considered.

- 5. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by a specified manufacturer. Comply with provisions in "Product Substitutions" Article.
- 6. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, design profiles, dimensions, and other characteristics that are based on the product named.
  - a. Provide Basis-of Design product or by one of the listed manufacturers.
  - b. Substitutions of other products will <u>not</u> be considered.
- 7. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
  - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
  - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 PRODUCT SUBSTITUTIONS CRITERIA

- A. Timing: Architect may consider requests for substitution if received within thirty (30) calendar days after the "Notice to Proceed" or before the first (1<sup>st</sup>) "Application for Payment." Requests received after that time may be considered or rejected at discretion of Architect without explanation.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action or reason, except to record noncompliance with these requirements:
  - Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
  - 2. Requested substitution does not require extensive revisions to the Contract Documents.
  - 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - 4. Substitution request is fully documented and properly submitted.
  - 5. Requested substitution will not affect work of other Trades Contractor's construction time schedule.
  - 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - 7. Requested substitution is compatible with other portions of the Work.
  - 8. Requested substitution has been coordinated with other portions of the Work.
  - 9. Requested substitution provides specified warranty.

10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

# 2.3 COMPARABLE PRODUCTS

- A. Where products or manufacturers are specified by name (except noted as "basis-of-design), submit the following, in addition to other required submittals, to obtain approval of an unnamed product:
  - 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  - 3. Evidence that proposed product provides specified warranty.
  - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  - 5. Samples, if requested.

## PART 3 - EXECUTION

3.1 Architect's "Substitution Request" form included at end of this Specification Section.

END OF SECTION 01 6000

FRENCH

# SUBSTITUTION REQUEST

Project:	Substitution Request Number:	
	From:	
To:	Date:	
	A/E Project Number:	
Re:	Contract For:	
Specification Title:	Description:	
Section: Page:	Article/Paragraph:	
Proposed Substitution:		
Manufacturer: Address:	Phone:	
Trade Name:	Model No.:	
Installer: Address:	Phone:	
History: New product 2-5 years old 5-10 yr	rs old 🗌 More than 10 years old	
Point-by-point comparative data attached - < REQUIRED B	Y A/E >	
Reason for not providing specified item:		
Similar Installation:		
Project:	Architect:	
Address:	Owner:	
	Date Installed:	
Proposed substitution affects other parts of Work: 🗌 No	Yes; explain	
	(\$).	
	Li tes (Adaj [Deduct]days.	
Supporting Data Attached: Drawings Product < REQUIRED BY A/E >	ct Data 🗌 Samples 🗌 Tests 🗌 Reports	

The Undersigned certifies:

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- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.

• Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.

• Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.

Proposed substitution does not affect dimensions and functional clearances.

• Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

• Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:	
Signed by:	
Firm:	
Address:	
Telephone:	
Attachments:	

#### A/E's REVIEW AND ACTION

Note: Should the Architect not respond within Twelve (12) calendar days of the dated date of Request, the proposed substitution is considered rejected.

Substitution approved - Make submittals in accordance with Specification Section 01330.
Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
Substitution rejected - Use specified materials.
Substitution Request received too late - Use specified materials.
Signed by:
Printed name:
Date:
Title:
Additional Comments:
Contractor
Subcontractor
Subcontractor
Supplier
Manufacturer
A/E

## SECTION 01 7300 - EXECUTION

#### PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. General installation of products.
  - 2. Starting and adjusting.
  - 3. Protection of installed construction.
  - 4. Correction of the Work.
- B. Related Sections include the following:
  - 1. Division 01 3300 Section "Submittal Procedures" for submitting surveys.
  - 2. Division 01 7329 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
- B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Examine roughing-in for electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

## 3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Owner and Architect not less than seven (7) calendar days in advance of proposed utility interruptions. Provide information on length of interruptions.
  - 2. Do not proceed with utility interruptions without Owner's and Architect's written permission.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

## 3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  - 4. Maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling.
- B. Building Envelope Integrity: The completed project must provide a building enclosure that does not allow water to penetrate the building envelope. Outside air infiltration into the building must be minimized unless controlled or part of hvac system operation. Outside air infiltration is not allowable in a quantity that can allow freezing or negatively impact piping (plumbing, fire protection, hvac), hvac systems, electrical systems or any other building system.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- E. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

- 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
- 2. Allow for building movement, including thermal expansion and contraction.
- 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

## 3.4 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold materials more than seven (7) calendar days during normal weather or three (3) calendar days if the temperature is expected to rise above 80 deg F (27 deg C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

## 3.5 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 4000 Section "Quality Requirements."

## 3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

## 3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 7329 Section "Cutting and Patching."
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 7300

## SECTION 01 7329 - CUTTING AND PATCHING

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching of items indicated but not limited to the following:
  - 1. Architectural work.
  - 2. Mechanical work.
  - 3. Partial Demolition work.
- B. Related Sections include the following:
  - 1. Divisions 02 0000 through Divisions 33 0000 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
  - 2. Division 07 8413 Section "Penetration Fire-stopping" for patching fire-rated construction.

#### 1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

#### 1.4 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
  - 1. Consult with Architect and Structural Engineer before beginning work.
    - a. Provide work program for removal and shoring of the existing structural members and framing conditions of the building.
  - 2. Comply with all requirements of governmental, local and agencies having jurisdiction.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or results that increase maintenance or decreased operational life or safety. Operating elements include, but not limited to, the following:

- 1. Primary operational systems and equipment.
- 2. Air or smoke barriers.
- 3. Fire-suppression systems.
- 4. Mechanical systems piping and ducts.
- 5. Control systems.
- 6. Communication systems.
- 7. Electrical wiring systems.
- 8. Operating systems of special construction in Division 13 Sections.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include, but not limited to, the following:]
  - 1. Water, moisture, or vapor barriers.
  - 2. Membranes and flashings.
  - 3. Exterior curtain-wall construction.
  - 4. Equipment supports.
  - 5. Piping, ductwork, vessels, and equipment.
  - 6. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

#### 1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

#### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

## PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

# 3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Divisions 31 Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

- 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance.
  - 4. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  - 5. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  - 6. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 7329

## SECTION 01 7700 - CLOSEOUT PROCEDURES

## PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion and Inspection procedures.
  - 2. Final Completion and Inspection Procedures.
  - 3. Warranties.
  - 4. List of incomplete items (punch list).
  - 5. Payment Procedures.
  - 6. Operation and maintenance manuals.
  - 7. Final Cleaning.
- B. Related Sections include, but not limited to the following:
  - 1. Division 01 2900 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
  - 2. Division 01 3200 Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.
  - 3. Division 01 7300 Section "Execution Requirements" for progress cleaning of Project site.

#### 1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial

Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

- 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- 2. Results of completed inspection will form the basis of requirements for Final Completion.

#### 1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
  - 1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
  - 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
  - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### 1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

#### 1.6 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  - 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  - 3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Architect and Construction Manager.
    - d. Name of Contractor.
    - e. Page number.

#### 1.7 OPERATION AND MAINTENANCE MANUALS

- A. Assemble and submit one (1) complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
  - 3. Maintenance Data:
    - a. Manufacturer's information
    - b. Name, address, and telephone number of Installer or supplier.
    - c. Maintenance procedures.
    - d. Maintenance and service schedules for preventive and routine maintenance.
    - e. Maintenance record forms.
    - f. Copies of maintenance service agreements.
    - g. Copies of warranties and bonds.
- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

#### PART 2 - PRODUCTS

#### 2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

#### 3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations and all other governing agencies having jurisdiction on the project.
- B. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 7700

#### SECTION 22 0005 BASIC PLUMBING REQUIREMENTS

#### PART 1 GENERAL

# 1.01 RELATED DOCUMENTS

- A. This section applies to all sections of Division 22.
- B. Drawings and general provisions of the contract, including Division 00 and Division 01 specification sections, apply to work of this section.
- C. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on drawings and/or herein, including all labor, materials, equipment and incidentals necessary and required for their completion.
- D. The items in this section are supplementary to the requirements set forth in other portions of the specifications as indicated under item "A" above.

## 1.02 APPLICATION

- A. This section applies to all plumbing work. The contractors involved shall check all sections of the specifications in addition to the particular section covering their specific trade. Each distinct section of the specifications aimed for one trade may have detailed information with regards to other trades, therefore, it is imperative that all sections be reviewed to get a complete picture of all other trades' functions and work required.
- B. The plumbing contractor is responsible for the installation and operation of the plumbing systems.
- C. The plumbing contractor is responsible for receiving, unloading and placement of all of the owner provided equipment.

#### 1.03 INSPECTION OF SITE

- A. Each Contractor shall visit the site prior to bid submission to determine all existing conditions that may affect his work and shall make appropriate allowances for such conditions in his bid. Failure to visit the site shall not be cause for a request for additional compensation later in the project during construction.
- B. The submitting of a proposal implies that the contractor has visited the site and understands the conditions under which the work must be conducted.
- C. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- D. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Owner before proceeding.

#### 1.04 ALTERNATES AND SUBSTITUTIONS

A. Refer to Division 01 - General Requirements for procedures to submit products by a Manufacturer that is not listed as approved equal in the Specifications.

# 1.05 DEVIATIONS FROM BASIS OF DESIGN MANUFACTURER

A. Products identified wiithin the schedules and details are used as the basis of design for laying out and coordinating with other trades such as structural, architectural, and electrical. Should Division 22 Contractor submit products by a manufacturer other than that indicated as Basis of Design in the Drawings, Contractor shall then be responsible for evaluating the impacts of the proposed Manufacturer's equipment, even if the Manufacturer is listed in the specifications as an approved equal. This includes the proposed Manufacturer's electrical, architectural and structural requirements and their subsequent impacts on the current design and coordination of any differing dimensions and clearances with all other trades. This evaluation shall be included as part of the proposed product submittal.

## 1.06 MATERIALS

- A. Plumbing equipment is to be furnished with motors, electrical controls and protective devices, and integral operating devices which are normally included by the manufacturer or required by the Contract Documents.
- B. The Plumbing trades shall provide all control wiring, 120 volts and less, for the equipment and devices furnished under Division 22 of these specifications, including all wiring devices, transformers, conduit, etc. Any conduits used for control wiring shall meet the specifications as indicated in Division 26.
- C. Power wiring 120 volts and greater shall be by the Electrical Trades.

## 1.07 CODES, PERMITS AND FEES

- A. Unless otherwise indicated, all required permits, licenses, inspections, approvals and fees for plumbing work shall be secured and paid for by the contractor. All work shall conform to all applicable codes, rules and regulations. Applicable publications listed in all sections of Division 22 shall be the latest issue, unless otherwise noted.
- B. Rules of local utility companies and municipalities shall be complied with. Check with the utility company and/or municipality supplying service to the installation and determine all devices including, but not limited to: meters, regulators, valves which will be required and include the cost of all such items in the proposal.
- C. All work shall be executed in accordance with the rules and regulations set forth in local and state codes. Prepare any detailed drawings or diagrams which may be required by the governing authorities. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern.

# 1.08 MAINTENANCE

- A. Provide 4 hours of instruction to the owner's designated personnel in the maintenance and operation of equipment and systems.
- B. Provide complete maintenance and operating instructional manuals covering all mechanical equipment herein specified, together with parts lists. Maintenance and operating instructional manuals shall be job specific to this project. Generic manuals are not acceptable. Manuals shall be submitted in electronic format for review. When approved, four (4) bound hard copies and an indexed electronic PDF shall be provided to the owner. Maintenance and operating instructional manuals shall be provided when construction is approximately 75% complete.

# 1.09 WARRANTY AND GUARANTEE

A. Contractor shall guarantee all work installed by him or his subcontractors to be free from defect in material and workmanship for a period of one year from date of final acceptance of the work, unless a longer period is stipulated under specific headings. Contractor shall repair or replace at no additional cost to the owner, any material or equipment developing defects and shall also make good any damage caused by such defects or the correction of defects. Repairs or replacements shall bear additional guarantee, as originally called for, dated from the final acceptance of the repair or replacement. This requirement shall be binding even though it will exceed product guarantees normally furnished by some manufacturers. Contractor shall submit his own and each equipment manufacturers written certificates, warranting that each item of equipment furnished complies with all requirements of the drawings and specifications. Note that guarantee shall run from date of final acceptance of the work, not from date of installation of a device or piece of equipment.

# 1.10 SUBMITTALS

- A. Shop drawings and samples shall be submitted in compliance with the Conditions of the Contract and Division 1 General Requirements.
- B. Contractor shall provide submittals where items are referred to by symbolic designation on the drawings. All submittals shall bear the same designation (plumbing piping, plumbing fixtures, etc.). Refer to other sections of the electrical specifications for additional requirements.
- C. Shop Drawings: Each piece of equipment shall be identified by the number shown in the schedules and by specification article number pertaining to the item. Shop drawings shall as a minimum be ¼" equals 1' 0" scale, and shall be newly prepared by the Contractor and not reproduced from the Architect's drawings. Layouts shall be made for all floor plans including all ductwork, piping, electrical distribution and other mechanical equipment. Layouts shall show clearances of piping, ducts, etc., above floor.
- D. Contractor shall obtain Engineer's approval on all the work before any equipment is purchased, or any work installed. Contractor shall also secure approval of the Governmental Authorities having jurisdiction on all equipment and on the layout of the complete system.
- E. The Engineer's review and approval of shop drawings is a gratuitous assistance and in no way does it relieve the Contractor from responsibility for errors or omissions which may exist on the shop drawings. Where such errors or omissions are discovered later, they must be made good by the Contractor, without any additional cost to the Owner, irrespective of any approval by the Engineer.
  - 1. The Contractor shall incorporate with his shop drawings, a letter indicating all deviations from the plans and/or specifications. If in the opinion of the Architect, the deviations are not equal, the Contractor will be required to furnish the item as specified and as indicated on the drawings.
  - 2. Record documents shall be submitted in compliance with the requirements of the Specifications.
- F. Engineer WILL NOT REVIEW:
  - 1. Submittals not specified.
  - 2. Submittals not reviewed by Contractor; including Contractor stamp with signature comments.
  - 3. Submittals made after work is delivered to site and/or installed.
  - 4. Submittal resubmissions unless resubmission is required by Architect/Engineer.
- G. Installation of any item that requires submittal approval by the engineer shall be installed at the contractors risk. The contractor, at his cost, shall remove all work installed prior to approval of the submittal.

- H. The engineer will not be responsible for errors in quantities, or dimensions required to fit the job condition, details of fabrication to insure proper assembly at the job, or for errors resulting from errors in submittals.
- I. For underground piping, record dimensions and invert elevations of all piping, including all offsets, fittings, cathodic protection and accessories. Locate dimensions from benchmarks that will be preserved after construction is complete.

## 1.11 RECORD DRAWINGS

- A. Refer to Division 01 General Requirements for procedures. All literature shall be furnished in accordance with requirements listed in Division 01.
- B. Contractor shall provide the following record drawings as part of the Project closeout document process:
  - 1. Contract Documents, specifications and submittals, indicating "As-Built" conditions and actual products selected for use.
  - 2. Product and Maintenance manuals for all equipment listed within this specification manual and in Contract Documents. Provide with parts lists as applicable.

## 1.12 QUALITY ASSURANCE

- A. Other referenced standards:
  - 1. Comply with referenced standards, guidelines, data sheets from various associations, including NFPA, ANSI, ASTM, ASME, ASHRAE.

# PART 2 PRODUCTS

## 2.01 SLEEVES AND ESCUTCHEONS

A. Provide sleeves wherever pipes pass through exterior wall and floors. Sleeves shall be schedule 40 steel pipe cut to length. Sleeves shall terminate flush with walls, partitions and ceilings in finished areas. All sleeves through floor shall extend 2" above floor. Provide cast brass nickel-plated escutcheons with positive catches on each visible sleeve penetration. Sleves are to be sealed at each installation with a 3M approved sealant. The space between the inside of the sleeve and the outside of the pipe or conduit with in the sleeve shall be sealed at each installation with a 3M approved sealant.

## 2.02 DIELECTRIC UNIONS

- A. Dielectric unions shall be used to connect dissimilar metals (such as steel and copper) to prevent electrolytic action.
- B. Dielectric waterway fittings shall be a copper-silicon casting conforming to UNS C87850, and UL classified in accordance with ANSI / NSF-61 for potable water service.

#### 2.03 BUILDING ATTACHMENTS FOR PLUMBING WORK SUPPORTS

- A. General Requirements:
  - 1. Provide building attachments required for supporting plumbing work, suitably selected and installed for the loads applied with a minimum additional safety factor of 3.
  - 2. Where specified attachments are not suitable for conditions, submit to Engineer for approval, proposal for alternate building attachments.
  - 3. If specially designed building attachments are required, retain the services of a licenced structural engineer to design such building attachments.
  - 4. Approved Manufacturers: Grinnell, or equivalent products by Michigan Hanger and B-Line.
  - 5. Provide supplemental trapeze supports where necessary. Design trapeze to support all trades. Coordinate loads, and supports with all trades. Size trapeze for maximum deflection of 1/64 of the span.
- B. Attachments to Structural Steel:

- 1. Support plumbing work from building structural steel where possible and approved. No welding or bolting to structural steel is permitted unless authorized by Architect. C-clamps are not permitted.
  - a. Center beam clamp for loads over 120 lb.: Malleable center hung Grinnell Fig. 228.
  - b. Side beam clamp with retaining clips for loads up to 120 lb.
- C. Cast in Place Concrete Inserts:
  - Provide inserts selected for applied load of present load plus 100% for future, and coordinated with concrete work. Except as detailed on drawings, inserts shall be Unistrut or Grinnell. Plan, lay out and coordinate setting of inserts prior to concrete pour. Use Grinnell Fig. 285 lightweight concrete insert for loads up to 400# or Grinnell Fig. 281 Wedge Type concrete insert for loads up to 1200#
- D. Drilled Insert Anchors:
  - 1. Where plumbing work cannot be supported from structural steel, or cast in place concrete inserts, provide drilled concrete insert anchors. Submit for approval, project specific installation drawings for all loads over 100 lbs. Install inserts in web of beam if possible and approved. Insert depth shall not exceed two thirds the thickness of the concrete. Where existing concrete appears to be deteriorating, or where applied load at insert exceeds 1000 lbs., conduct test of concrete to determine derated capacity of insert. Anchors may be adhesive or expansion type up to 1000 lbs., and shall be adhesive type for loads over 1000 lbs.

# PART 3 EXECUTION

# 3.01 GENERAL

- A. Existing piping: when encountered during the course of work, protect, brace and support existing piping where required for proper execution of the work.
- B. Interruption of existing active piping: when the course of work makes shut-down of services unavoidable, the plumbing contractor shall schedule the shut-down at such time as approved by the owners representative, which will cause least interference with established operating routine.
- C. Arrange work accordingly, providing such fittings as duct transitions traps, valves and accessories necessary to complete all construction in an orderiy fashion.
- D. Install all equipment in strict accordance all directions and recommendations furnished by the manufacturer.
- E. Roof mounted equipment requiring service shall be located a minimum of 10 feet from roof edges. Where equipment can't be located away from roof edge and guard rails are not provided, provide permanent fall arrest anchorage connection device that complies with ANSI/ASSE Z 359.1.

# 3.02 INTERPRETATION OF CONTRACT DOCUMENTS

- A. Should there be discrepancy or a question of intent, refer matter to Architect/Engineer for decision before ordering any equipment or materials or before starting any related work.
- B. Drawings and Specifications are to be taken together. Work specified and not shown or work shown and not specified shall be performed or furnished as though mentioned in both Specifications and Drawings. If there is discrepancy between Drawings and Specifications as to quantity or quality to be provided, the greater quantity or better quality shall be provided.
- C. Minor items and accessories or devices reasonably inferable as necessary to complete and proper installation and operation of any system shall be provided by Contractor for such system whether or not specifically called for by Specifications or Drawings.

- D. Architect/Engineer may change location of any equipment 5' and any piping, ductwork, conduit, etc. 10' in any direction without extra charge, provided such changes are made before installation.
- E. Locations of items not definitely fixed by dimensions are approximate only and exact locations necessary to secure the best conditions and results shall be determined at the site and shall be subject to review and approval by Architect/Engineer.
- F. Follow drawings in laying out work, check drawings of other trades to verify spaces in which work will be installed, and maintain maximum headroom and space conditions at all points.
  - 1. Where headroom or space conditions appear inadequate, notify Architect or Owner's field representative before proceeding with installation.
  - 2. Pipe/duct rerouting and size changes shall be made at no additional cost to the Owner.
- G. Furnish advance information on locations and sizes of frames, boxes, sleeves and openings needed for the work, and also furnish information and shop drawings necessary to permit installation of other work without delay.
- H. Where there is evidence that parts of the Work specified in Divisions 21, 22, and 23 will interfere with other work, assist in working out space conditions to make satisfactory adjustments, revise and submit coordinated shop drawings.
- I. After review and without additional cost to the Owner, make minor modifications in the work as required by structural interferences, by interferences with work of other sections or for proper execution of the work.
- J. Work installed before coordinating with other work so as to cause interference with other work shall be changed and corrected without additional cost to the Owner.
- K. Drawings are diagrammatic in nature and are a graphic representation of requirements and shall be followed as closely as actual building construction will permit. All changes from the plans necessary to make the work conform to the building as constructed and to fit the work of other trades or to conform to rules of the Governmental Authorities having jurisdiction, NFPA, OSHA and the Owner's Insurance Underwriters, shall be made by the Contractor without extra cost to the Owner.
- L. The layout of the piping, ductwork, equipment, etc., as shown on the drawings shall be checked and exact locations shall be determined by the dimensions of the equipment approved and the Contractor shall obtain approval for the revised layout before the apparatus is installed. The Contractor shall field measure or consult existing record Architectural and Structural Drawings if available for all dimensions, locations of partitions, locations and sizes of structural supports, foundations, etc.
- M. Omission in the Drawings and/or Specifications of any items necessary for the proper completion or operation of the work outlined in this specification shall not relieve the Contractor from furnishing same without additional cost to the Owner.
- N. The Equipment Shop Drawings should be furnished to the installing Contractor by the purchasing Contractor before roughing in. Contractor shall not install any piping or ductwork for said equipment until he has received approved shop drawings for same.

# 3.03 ALTERATIONS IN PRESENT BUILDING AND SYSTEMS

A. Contractor shall take particular note of the revisions and alterations to the existing systems, facilities and equipment due to the new construction as indicated on the Drawings and/or in Specification. Contractor shall remove, reroute or alter all services, ductwork, etc., as required or as indicated on the drawings.

B. The Contractor shall maintain all services in the existing building. In case, where new service connections are to be made to existing services and service interruptions can in no way be avoided, the service interruptions shall be with the minimum of inconvenience to the Owner and the work shall be done at such time of any day, Saturday and Sunday included, and only as directed by the Owner or the Architect.

## 3.04 ACCESSIBILITY

A. Do not locate traps, valves, controls, unions, cleanouts, etc. in any system at a location that will be inaccessible after construction is completed. Maintain accessibility for all components in plumbing systems.

## 3.05 ACCESS PANELS:

- A. Refer to Division 08 Openings; Provide access doors in locations as required by applicable codes and as indicated below. Coordinate locations with architectural trades.
- B. Submit shop drawings for review before ordering panels. Where fire rating is required, furnish label doors compatible with fire rating of assembly.
- C. Contractor shall confer with other trades with respect to access panel locations, and shall wherever practical group valves, traps, dampers, etc. in such way as to be accessible from single panel and eliminate as many access panels as possible.
- D. Furnish access panels to access valves, traps, control valves or devices, dampers, damper motors, etc. Access panels shall be sized as necessary for ample access, or as indicated on drawings, but no smaller than 12" x 12" where devices are within easy reach of operator, and at least 24"x24" when operator must pass through opening in order to reach the devices. Architectural Trades shall install access panels coordinated with Mechanical Trades.
- E. Access panels in fire rated walls or ceiling must be U.L. labeled for intended use. Unless otherwise indicated on plans, access doors shall be hinged flush type steel framed panel, 14 gauge minimum for frame, and with anchor straps. Only narrow border shall be exposed. Hinges shall be concealed type. Locking device shall be flush type and screw driver operated. Metal surfaces shall be prime coated with rust-inhibitive paint. Panels shall be compatible with architectural adjacent materials.

# 3.06 PROTECTION OF ELECTRICAL EQUIPMENT

- A. Contractor shall furnish and install sheet metal drain pans beneath piping that is routed above electrical equipment and/or above the 3' access space in front of such equipment. Electrical equipment, for the purpose of addressing drain pan requirements, shall be defined as free-standing or wall-mounted switchgear, transformers, distribution boards or motor control centers.
  - 1. Drain pans shall be 20 gauge galvanized sheet metal with a minimum 4" high turned up edge. Bottom of drain pan shall slope to a single drainage point at <sup>1</sup>/<sub>8</sub>" per foot. A 1" diameter clear plastic tube shall allow collected fluid to drain to the nearest open site floor drain. Secure plastic tubing to building structure only.
  - 2. Drain pan shall be hung from building structure with angle iron trapeze hangers (no hanger shall penetrate the drain pan). Consider drain pan to be full of water for hanger load calculations.
  - 3. Drain pans shall include liquid detectors with alarms only if noted on the drawings. Liquid detectors shall be specified in Section 22 10 06 Plumbing Piping Specialties.
- B. Contractor shall include provisions to adjust the local lighting layout, at no extra cost to Owner, in order to accommodate any detrimental effect the drain pan has on the illumination of the electrical equipment and access space.

# 3.07 CUTTING, PATCHING AND DAMAGE TO OTHER WORK

A. Refer to Division 01 - General Requirements.

- B. All cutting required shall be done by the contractor whose work is involved, without extra cost the owner. All patching and restoration including the furnishing and installation of access panels in ceiling, walls; etc. Within the building lines shall be done by the respective, responsible contractor. No cutting of structural steel, concrete, or wood shall be done without prior approval and explicit directions of the architect patched by the respective, responsible contractor.
- C. The contractor, under whose jurisdiction the work may fall, shall provide labor, material, and tools required to cut, repair, protect, cap, or relocate existing pipes, conduits, or utilities interfering with or uncovered during work, per regulations of the authorities having jurisdiction.

## 3.08 EXCAVATION AND BACKFILLING

A. Provide all excavation, trenching, tunneling, removal of materials, de-watering and backfilling required for the proper laying of pipes and plumbing work. Coordinate the work with other excavating and backfilling in same area.

# 3.09 ROUGH-IN FOR CONNECTION TO EQUIPMENT

A. It shall be the responsibility of each contractor to study the architectural, structural, electrical, and mechanical drawings, conferring with the various trades involved and checking with the supplier of equipment in order to properly rough-in for all equipment.

## 3.10 MATERIAL AND EQUIPMENT

A. All material and equipment shall be new and of the best quality used for the purpose in good commercial practice, and shall be the standard product of reputable manufacturers. The material and equipment must meet approval of state and local codes in the area it is being used. Roof decks shall not be used to support piping, conduit, equipment, devices, etc.

#### 3.11 SEAL PENETRATIONS

A. Seal the space around pipes in sleeves and around duct openings through walls, floors and ceilings. Provide adequate clearance to allow for proper sealing.

# 3.12 SOUND CONTROL

- A. Penetrations shall be maintained airtight to prevent sound transfer.
- B. Piping shall pass through sleeves. Pack sleeves tight with glass fiber or oakum and caulked on both sides with non-hardening acoustical sealant.

# 3.13 FIRESTOPPING

- A. Refer to Division 07 Thermal and Moisture Protection for more information.
- B. Provide UL classified firestopping system for plumbing penetrations through rated walls and floors to maintain the fire rating.

#### 3.14 CONTROL WIRING

A. All control wiring for plumbing and electrical equipment, including motor starters, shall be 120 volt maximum and wired with one side of the coil grounded and the operating contacts in the north side of the circuit. All control wiring shall be installed in conduit.

# 3.15 CLEANING, FLUSHING, AND INSPECTING

- A. Refer to Division 01 General Requirements; all plumbing equipment and components shall be cleaned as frequently as necessary through the construction process and again prior to project completion.
- B. Clean exterior surfaces of installed piping systems of superfluous materials and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items.

- C. Sufficient flushing water shall be introduced into the mains to produce a velocity of not less than 4' per second and this flow rate shall be continued until the discharge is clean and clear and does not show evidences of silt or foreign matter when a sample is visually inspected.
- D. Inspect pressure piping in accordance with procedures of ASME B31.

## 3.16 DELIVERY, STORAGE AND PROTECTION OF EQUIPMENT AND MATERIALS

- A. Refer to Division 01 General Requirements; all equipment and materials shall be delivered, stored and secured per manufacturer's recommendations.
- B. On-site storage shall be coordinated with Construction Manager/General Contractor and be performed in a manner as to avoid damage, deterioration and loss.
- C. Contractor shall provide temporary protection for installed equipment prior to project completion.
- D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- E. All equipment shall be inspected prior to installation to assure that equipment is free from defect and damage.
- F. Protect plumbing fixtures and piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

## 3.17 PIPING TESTS

- A. Test pressure piping in accordance with ASME B31.
- B. General: Provide temporary equipment for testing, including pump and gauges. Test piping systems before insulation is installed wherever feasible and remove control devices before testing. Test each natural section of each piping system independently, but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating. Fill each section with water and pressurize for indicated pressure and time.
  - 1. Test each piping system at 150% of operating pressure, or other pressure as required by Authority Having Jurisdiction, whichever is greater.
    - a. Domestic water systems and equipment vents shall be tested hydrostatically for minimum of four hours at 1½ times design pressure for that system, or 100 psig minimum, whichever is greater, unless otherwise specified.
    - b. Storm, soil, waste and vent piping shall be tested with water for minimum of 24 hours at 10 feet head.
    - c. Acid resistant waste and vent systems shall be tested as per manufacturer's recommendations.
  - 2. Observe each test section for leakage at end of test period. Test fails if leakage is observed or if pressure drop exceeds 5% of test pressure.
- C. Repair piping systems sections which fail required piping test, by disassembly and reinstallation, using new materials to extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics or other temporary repair methods.
- D. Drain test water from piping systems after testing and repair work has been completed.

# END OF SECTION 22 0005

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#### SECTION 22 0505 SELECTIVE DEMOLITION FOR PLUMBING

## PART 1 GENERAL

# 1.01 SECTION INCLUDES

A. Demolition and extension of existing plumbing work.

# 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements.
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements, cutting and patching requirements, repairs.

# 1.03 SUMMARY

- A. The work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, and services to completely execute the system of minor electrical demolition as described in this specification.
- B. The demolition documents plans and specification have been prepared from existing non-as built documents and cursory non-invasive field investigation.
- C. It is the contractors obligation to become familiar with the extent of demolition and the existing condition before submitting their bid.
- D. During demolition if the contractor discovers unforeseen significant non-code compliance conditions of the existing installation they shall notify the Architect and Engineer immediately in writing.
- E. The contractor shall become familiar with the drawings and scope of work of other trades as the work scope of those trades relates to mechanical equipment and connection requirements.
- F. During demolition the contractor shall record on site as-builts all plumbing sanitary, waste and domestic hot, cold and hot water recirculation capped branches for reuse in renovated project space.

# PART 2 PRODUCTS

# 2.01 MATERIALS

A. Materials and equipment for patching and extending work: As specified in individual sections.

# PART 3 EXECUTION

# 3.01 EXAMINATION

- A. Verify that piping to be demolished serve only equipment and facilities within the demolition areas.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Report discrepancies to Owner before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

# 3.02 PREPARATION

- A. Identify locations for capping plumbing piping before any demolition work commences.
- B. Coordinate utility service shut-downs with Utility Companies.
- C. Provide temporary connections to maintain existing systems in service during construction.
- D. Confirm isolation valve locations for domestic water piping. Repair leaking isolation valves or replace inoperable valves before commencing piping demolition.

# 3.03 DEMOLITION AND EXTENSION OF EXISTING PLUMBING WORK

- A. In general plumbing remodeling work is shown on Drawings but carefully study all drawings for all contracts for "demolition" and "remodeling" work in existing building and field check to verify locations where such work is being done to determine exact extent of work required. No extra will be allowed for additional work required because of demolition or remodeling whether or not work is specifically noted, itemized or shown on Drawings.
- B. Remove existing equipment and materials pertaining to contract as specified or as required, whether shown on Drawings or not, to prepare for new work of all contracts.
- C. Where necessary, reroute piping, ducts, etc. from within walls, floors, ceilings, etc. being removed. Contractor involved with interrupted service shall be responsible for accomplishing required work whether shown on Drawings or not.
- D. Remove, relocate, and extend existing plumbing piping to accommodate new construction.
- E. Remove domestic water piping back to main and provide isolation valve and cap. DEAD LEGS ARE NOT ALLOWED.
- F. Remove sanitary and waste piping to branch connection fitting to negate any dead legs.

# 3.04 CLEANING AND REPAIR

- A. Refer to Division 01 General Requirements for procedures.
- B. Clean and repair existing materials and equipment that remain or that are to be reused.

# END OF SECTION 22 0505

## SECTION 22 0523 GENERAL-DUTY VALVES FOR PLUMBING PIPING

# PART 1 GENERAL

# 1.01 SECTION INCLUDES

- A. Ball valves.
- B. Drain valves.

# 1.02 RELATED REQUIREMENTS

- A. Section 08 3100 Access Doors and Panels.
- B. Section 22 0553 Identification for Plumbing Piping and Equipment.
- C. Section 22 0719 Plumbing Piping Insulation.
- D. Section 22 1005 Plumbing Piping.

# 1.03 ABBREVIATIONS AND ACRONYMS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene copolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- D. PTFE: Polytetrafluoroethylene.
- E. TFE: Tetrafluoroethylene.
- F. WOG: Water, oil, and gas.

# 1.04 REFERENCE STANDARDS

- A. ASTM F-2389-07 Standard Specification for Pressure-rated Polypropylene (PP) Piping.
- B. CSA B137.11 Polypropylene (PP-R) Pipe and Fittings for Pressure Applications.
- C. DIN-DVS 2207-112017 Welding Thermoplastic materials Heated element welding of pipes, piping parts, and panels made of polypropylene.
- D. ASME B1.20.1 Pipe Threads, General Purpose, Inch; 2013 (Reaffirmed 2018).
- E. ASME B16.1 Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250; 2020.
- F. ASME B16.5 Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard; 2020.
- G. ASME B16.10 Face-to-Face and End-to-End Dimensions of Valves; 2022.
- H. ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
- I. ASME B16.34 Valves Flanged, Threaded, and Welding End; 2020.
- J. ASME B31.9 Building Services Piping; 2020.
- K. ASME BPVC-IX Boiler and Pressure Vessel Code, Section IX Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2023.
- L. AWWA C606 Grooved and Shouldered Joints; 2022.
- M. MSS SP-110 Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata.
- N. NSF 61 Drinking Water System Components Health Effects; 2022, with Errata.
- O. NSF 372 Drinking Water System Components Lead Content; 2022.

# 1.05 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Grooved joint valves shall be referred to on drawings and product submittals, and be identified by the manufacturer's listed model or series designation.

## 1.06 QUALITY ASSURANCE

- A. Manufacturer:
  - 1. Obtain valves for each valve type from single manufacturer.
- B. Welding Materials and Procedures: Comply with ASME BPVC-IX.
- C. Grooved end valves shall be of the same manufacturer as the adjoining couplings.
- D. All castings used for valve bodies shall be date stamped for quality assurance and traceability.

# 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Use the following precautions during storage:
  - 1. Maintain valve end protection and protect flanges and specialties from dirt.
    - a. Provide temporary inlet and outlet caps.
    - b. Maintain caps in place until installation.

# PART 2 PRODUCTS

# 2.01 APPLICATIONS

- A. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).
- B. Provide the following valves for the applications if not indicated on drawings:
  - 1. Shutoff: Ball or butterfly.
    - a. Gate valves shall only be used on shut off for pumped sanitary/storm piping only.
- C. Domestic, Hot and Cold Water Valves:
  - 1. 2 inch and Smaller:
    - a. Ball: Two piece, full port, bronze with bronze or stainless steel trim.
      - 1) Hot Forged brass valves by Bonomi are allowed as specified below. Only ASTM C28500 alloy allowed.
    - b. Bronze Swing Check: Class 125, bronze disc.
    - c. Bronze or Hot Forged Brass Spring Loaded Check: Class 125, nonmetallic disc

# 2.02 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
  - 1. Hand Lever: Quarter-turn valves 6 NPS and smaller.
- D. Insulated Piping Valves: With 2 inch stem extensions and the following features:
  - 1. Ball Valves: Extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
  - 2. Butterfly Valves: Extended neck.
  - 3. Memory Stops: Fully adjustable after insulation is installed.
- E. Valve-End Connections:
  - 1. Threaded End Valves: ASME B1.20.1.
  - 2. Flanges on Iron Valves: ASME B16.1 for flanges on iron valves.

- 3. Pipe Flanges and Flanged Fittings 1/2 inch through 24 inch: ASME B16.5.
- 4. Solder Joint Connections: ASME B16.18.
- 5. Grooved End Connections: Copper-tube dimensions, similar to AWWA C606.
- F. General ASME Compliance:
  - 1. Ferrous Valve Dimensions and Design Criteria: ASME B16.10 and ASME B16.34.
  - 2. Solder-joint Connections: ASME B16.18.
  - 3. Building Services Piping Valves: ASME B31.9.
- G. Potable Water Use:
  - 1. Certified: Approved for use in compliance with NSF 61 and NSF 372.
  - 2. Lead-Free Certified: Wetted surface material includes less than 0.25 percent lead content.
- H. Source Limitations: Obtain each valve type from a single manufacturer.

# 2.03 BRONZE, BALL VALVES

- A. General:
  - 1. Fabricate from dezincification resistant material.
  - 2. Copper alloys containing more than 15 percent zinc are not permitted.
- B. Two Piece, Full Port with Bronze or Stainless Steel Trim:
  - 1. Comply with MSS SP-110.
  - 2. WSP Rating: 150 psi.
  - 3. CWP Rating: 600-1000 psig.
  - 4. Body: Lead Free Bronze.
  - 5. Ends Connections: Pipe thread or solder.
  - 6. Seats: PTFE or TFE.
  - 7. Operator: Provide stem extension.
  - 8. Manufacturers:
    - a. Apollo Valves: www.apollovalves.com/#sle. BRONZE VALVES ONLY
    - b. Nibco: www.nibco.com BRONZE VALVES ONLY
    - c. ASC Engineered Solutions www.asc-es.com
    - d. Bonomi www.bonominorthamerica.com Lead Free Hot Forged Brass Ball Valves are allowed; only ASTM C28500 alloy is permitted.
    - e. Substitutions: See Section 01 6000 Product Requirements.

# 2.04 DRAIN VALVES

- A. Drain Valve with hose thread and chain and dust cap; chrome plated ball, blow-out-proof stem, and adjustable packing gland.
- B. Manufacturers:
  - 1. Hammond: www.hammondvalve.com
  - 2. Apollo valves: www.apollovalves.com
  - 3. Bonomi www.bonominorthamerica.com
  - 4. Nibco: www.nibco.com/valves
  - 5. Milwaukee: www.milwaukeevalve.com
  - 6. Jomar: www.jomarvalve.com
  - 7. Substitutions: See Section 01 6000 Product Requirements.

# PART 3 EXECUTION

# 3.01 INSTALLATION

A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.

- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.
- C. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- D. Provide access where valves and fittings are not exposed.
- E. Install valves with stems upright or horizontal, not inverted.

# END OF SECTION 22 0523

#### SECTION 22 0719 PLUMBING PIPING INSULATION

## PART 1 GENERAL

# 1.01 SECTION INCLUDES

- A. Flexible elastomeric cellular insulation.
- B. Glass fiber insulation.
- C. Jacketing and accessories.

#### 1.02 RELATED REQUIREMENTS

- A. Section 07 8400 Firestopping.
- B. Section 22 1005 Plumbing Piping: Placement of hangers and hanger inserts.

## 1.03 REFERENCE STANDARDS

- A. ASTM C177 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).
- B. ASTM C195 Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2019).
- C. ASTM C534/C534M Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2023.
- D. ASTM C547 Standard Specification for Mineral Fiber Pipe Insulation; 2022a.
- E. ASTM C795 Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2023).
- F. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- G. ASTM E96/E96M Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a, with Editorial Revision (2023).
- H. UL 723 Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

## PART 2 PRODUCTS

# 2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

## 2.02 GLASS FIBER INSULATION

- A. Manufacturers:
  - 1. CertainTeed Corporation: www.certainteed.com/#sle.
  - 2. Johns Manville Corporation: www.jm.com/#sle.
  - 3. Knauf Insulation: www.knaufinsulation.com/#sle.
  - 4. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
  - 5. Substitutions: See Section 01 6000 Product Requirements.

- B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
  - 1. K Value: ASTM C177, 0.24 at 75 degrees F.
  - 2. Maximum Service Temperature: 850 degrees F.
  - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm.
- D. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- E. Vapor Barrier Lap Adhesive: Compatible with insulation.
  - 1. Vapor Barrier Lap Adhesive shall be compatible with the insulation and as recommended by the insulation manufacturer.
- F. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.
- G. Indoor Vapor Barrier Finish:
  - 1. Vinyl emulsion type acrylic, compatible with insulation, white color.

## 2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturers:
  - 1. Aeroflex USA, Inc: www.aeroflexusa.com/#sle.
  - 2. Armacell LLC: www.armacell.us/#sle.
  - 3. K-Flex USA LLC: www.kflexusa.com/#sle.
  - 4. Substitutions: See Section 01 6000 Product Requirements.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
  - 1. Minimum Service Temperature: Minus 40 degrees F.
  - 2. Maximum Service Temperature: 220 degrees F.
  - 3. Connection: Waterproof vapor barrier adhesive.
- C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

# 2.04 JACKETING AND ACCESSORIES

- A. PVC Plastic Jacket:
  - 1. Manufacturers:
    - a. Johns Manville Corporation: www.jm.com/#sle.
    - b. Proto Corporation: www.protocorporation.com.
    - c. Substitutions: See Section 01 6000 Product Requirements.
  - 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
    - a. Minimum Service Temperature: 0 degrees F.
    - b. Maximum Service Temperature: 150 degrees F.
    - c. Moisture Vapor Permeability: 0.02 per inch (0.029 ng/Pa s m), maximum, when tested in accordance with ASTM E96/E96M.
    - d. Thickness: 10 mil, 0.010 inch.
    - e. Connections: Brush on welding adhesive.
  - 3. Covering Adhesive Mastic: Compatible with insulation.

# PART 3 EXECUTION

# 3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

# 3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.
- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- E. Glass fiber insulated pipes conveying fluids below ambient temperature:
  - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
  - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- F. Glass fiber insulated pipes conveying fluids above ambient temperature:
  - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
  - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- G. Inserts and Shields:
  - 1. Application: Piping 1-1/2 inches diameter or larger.
  - 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
  - 3. Insert Location: Between support shield and piping and under the finish jacket.
  - 4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
  - 5. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- H. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions.
- I. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.

# 3.03 SCHEDULES

- A. Plumbing Systems:
  - 1. Domestic Cold Water: 1 inch thick.
  - 2. Plumbing Vents Within 10 Feet of the Exterior: 1/2 inch thick with PVC jacket.

# END OF SECTION 22 0719
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#### SECTION 22 1005 PLUMBING PIPING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Sanitary waste piping, above grade.
- B. Domestic water piping, above grade.
- C. Pipe flanges, unions, and couplings.
- D. Pipe hangers and supports.

## 1.02 RELATED REQUIREMENTS

- A. Section 22 0516 Expansion Fittings and Loops for Plumbing Piping.
- B. Section 22 0553 Identification for Plumbing Piping and Equipment.
- C. Section 22 0719 Plumbing Piping Insulation.

## 1.03 REFERENCE STANDARDS

- A. ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
- B. ASME B16.22 Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.
- C. ASME B16.23 Cast Copper Alloy Solder Joint Drainage Fittings: DWV; 2021.
- D. ASME B16.29 Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings—DWV; 2022.
- E. ASME B31.9 Building Services Piping; 2020.
- F. ASTM B32 Standard Specification for Solder Metal; 2020.
- G. ASTM B88 Standard Specification for Seamless Copper Water Tube; 2022.
- H. ASTM B88M Standard Specification for Seamless Copper Water Tube (Metric); 2020.
- I. ASTM B306 Standard Specification for Copper Drainage Tube (DWV); 2020.
- J. ASTM B813 Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- K. ASTM B828 Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- L. ASTM C564 Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2020a.
- M. ASTM C1277 Standard Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings; 2020.
- N. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- O. AWWA C651 Disinfecting Water Mains; 2014, with Addendum (2020).
- P. CISPI 310 Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2020.
- Q. MSS SP-58 Pipe Hangers and Supports Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).
- R. NSF 61 Drinking Water System Components Health Effects; 2022, with Errata.
- S. NSF 372 Drinking Water System Components Lead Content; 2022.

T. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

## 1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, and accessories. Provide manufacturers catalog information.
  - 1. Grooved joint couplings and fittings shall be referred to on drawings and product submittals, and be identified by the manufacturer's listed model or series designation.
- C. For Polypropylene Random (PP-R) piping:
  - 1. System purging and disinfecting activities report
  - 2. Qualification Data for Installers
  - 3. Water Analysis: Submit a copy of the water analysis to illustrate water quality available at Project site.
  - 4. Submit documentation of 10-year warranty with coverage for parts, materials, labor, property damage, and personal injury.

## 1.05 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.
- C. All grooved couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.
  - 1. All castings used for couplings housings, fittings, or valve and specialty bodies shall be date stamped for quality assurance and traceability.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

#### 1.07 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

#### 1.08 PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing plumbing piping systems with the following minimum working-pressure ratings:
  - 1. Cold-Water Piping: 80 psig at 75 deg. F

## PART 2 PRODUCTS

#### 2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

#### 2.02 SANITARY WASTE PIPING, ABOVE GRADE

- A. Cast Iron Pipe & Fittings: CISPI 301, ASTM A 888 hubless.
  - 1. Fittings: Cast iron.
  - 2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

- 3. Tensile Strength: 21,000 psig minimum.
- 4. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute and listed by NSF International.
- 5. Each length of pipe and each fitting shall be plainly marked with size, country of origin, and name of manufacturer, or manufacturer's registered trademark by which the manufacturer can be readily identified after installation.
- 6. CISPI, Hubless-Piping Couplings:
  - a. Manufacturers: Subject to compliance with requirements. Provide products by one of the following:
    - 1) Ideal Tridon
    - 2) ANACO-Husky
    - 3) Tyler Couplings
    - 4) Mission Rubber Company
  - b. Standards: ASTM C 1277 and CISPI 310.
  - c. Description: Shield Assemblies shall consist of stainless-steel bi-directional corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop. Couplings shall bear the trademark NSF International.
- B. Copper Tube: ASTM B306, DWV.
  - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, sovent.
  - 2. Joints: ASTM B32, alloy Sn50 solder.
- C. PVC Pipe:
  - 1. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.
  - 2. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.
  - 3. Cellular-Core PVC Pipe: ASTM F 891, Schedule 40 will not be accepted.
  - 4. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns.
  - 5. PVC Pressure Fittings: ASTM D 2466, Socket Type
  - 6. Primer: ASTM F 656.
    - a. Primer shall have a VOC content of 550g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)
    - b. Adhesive primer shall comply with the testing and product requirements of the California Department of Health Services "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers"
  - 7. Solvent Cement: ASTM D 2564.
    - a. PVC solvent cement shall have a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)
    - b. Solvent cement shall comply with the testing and product requirements of the California Department of Health Services "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers"

## 2.03 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Pipe: ASTM B88 (ASTM B88M), Type L (B) or K (A), Drawn (H). Type M (C) will not be accepted.
  - 1. Fittings:
    - a. ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.

- b. Grooved end fittings manufactured to copper-tube dimensions. (Flaring of tube or fitting ends to accommodate alternate sized couplings is not permitted.)
- 2. Joints:
  - a. ASTM B32, solder.
  - B. Grooved joint coupling consisting of two ductile iron housings. EPDM gasket rated from -40 degrees to 250 degrees, or Fluoroelastomer. ASTM A449 compliant bolts and nuts. Installation ready rigid coupling for direct installation without field disassembly.
    - 1) UL classified in accordance with NSF-61 for potable water service. The system shall meet the low-lead requirements of NSF-372.
- 3. Mechanical Press Sealed Fittings: Double-pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements.
  - a. Manufacturers:
    - 1) Apollo Valves: www.apollovalves.com/#sle.
    - 2) SCI Copper Press by ASC Engineered Solutions www.asc-es.com
    - 3) Nibco: www.nibco.com.
    - 4) Substitutions: See Section 01 6000 Product Requirements.
- B. Polypropylene Pipe: ASTM F2389, NSF 14, NSF 61, PP-R resin pipe and fittings in SDR 7.4 or 11 based on the required minimum pressure rating and use temperature, in accordance with manufacturer's instructions and ASTM F2389.
  - 1. Manufacturers:
    - a. Aquatherm; Green Pipe® or Green Pipe® MF (Faser®): https://aquatherm.com/
    - b. Aquatechnik; Fiber-T Red Striped Pipe
    - c. Substitutions shall be pre-approved by Engineer during bid phase.
  - 2. Fittings:
    - a. ASTM F2389, PP-R.
    - b. Fittings shall contain no rework or recycled materials except generated in the manufacturer's own plant from resin of the same specification from the same raw material.
    - c. Pipe shall not be threaded. Threaded transition fittings per ASTM F2389 shall be used where a threaded connection is required.
    - d. Fittings shall be installed according to the manufacturer's instructions.
  - 3. Joints:
    - a. Install fittings and joints using socket-fusion, electrofusion, or butt-fusion as applicable for the fitting type. All fusion-weld joints shall be made in accordance with the pipe and fitting manufacturer's specifications and product standards.
    - b. Fusion-weld tooling, welding machines, and electrofusion devices shall be as specified by the pipe and fittings manufacturer.
    - c. Prior to joining, the pipe and fittings shall be prepared in accordance with ASTM D2657, ASTM F 2389 and the manufacturer's specifications.
  - 4. Valves:
    - a. Valves in PP-R piping shall be by the same manufacturer as the piping system.
    - b. Polypropylene Valves shall be manufactured in accordance with the manufacturer's specifications and shall comply with the performance requirements of ASTM F 2389 or CSA B137.11. The valves shall contain no rework or recycled thermoplastic materials except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.

## 2.04 PIPE FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 inch and Under:
  - 1. Ferrous Pipe: Class 150 malleable iron threaded unions.

- 2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.
- B. Flanges for Pipe Sizes Over 1 inch:
  - 1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
  - 2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Unions or flanges for servicing and disconnect are not required in installations using grooved joint couplings.
- D. No-Hub Couplings:
  - 1. Testing: In accordance with ASTM C1277 and CISPI 310.
  - 2. General: Comply with ASTM C1277 and CISPI 310.
  - 3. Gasket Material: Neoprene complying with ASTM C564.
  - 4. Band Material: Stainless steel complying with ASTM A240.
  - 5. Eyelet Material: Stainless steel.
  - 6. Manufacturers:
    - a. Ideal Clamp Products, Inc: www.idealtridon.com//#sle.
    - b. Anaco-Husky: www.anaco-husky.com.
    - c. Tyler Couplings
    - d. Mission Rubber Company
    - e. Substitutions: See Section 01 6000 Product Requirements.

## 2.05 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
  - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
  - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
  - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
  - 4. Vertical Pipe Support: Steel riser clamp. Riser clamps shall be isolated from the building structure by placing felt or rubber pads between the clamp and the structure.
- B. All materials shall be new and manufactured for the specific purpose of supporting systems, equipment, pipes and accessories.
- C. Hangers for uncovered (uninsulated) copper pipig shall be factory-applied plastic coated steel or copper plated.
- D. Pipe Stands on Rooftops
  - 1. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
  - 2. High-Type, Single-Pipe Stand:
    - a. Description: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration
    - b. Base: Plastic or Stainless Steel
    - c. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuousthread rods.
    - d. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.
  - 3. High-Type, Multiple-Pipe Stand:
    - a. Description: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
    - b. Bases: One or more; plastic.
    - c. Vertical Members: Two or more protective-coated-steel channels.

- d. Horizontal Member: Protective-coated-steel channel.
- e. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.
- E. Polypropylene Pipe:
  - 1. Support vertical piping and tubing at base and at each floor. For piping 2" (63mm) or smaller, install mid-story guides.
  - 2. Install hangers and supports at intervals specified by pipe manufacturer.
  - 3. Hangers and supports shall also be provided within 1-foot of every change of direction and within 1-foot of any pipe fittings and valves.
  - 4. For hot water piping, provide clamps and supports that are felt or rubber/vinyl coated or lined.
  - 5. For cold water piping supports and clamps may be bare metal. Ensure that the clamp or support does not have sharp edges that may scrape or gouge the piping.
  - 6. Use care when installing riser clamps to not over tighten the clamps to cause indentation of the pipe. Riser clamps shall be isolated from the building structure by placing felt or rubber pads between the clamp and the structure.
  - 7. All piping support materials shall be new and manufactured for the specific purpose of supporting systems, equipment, pipes and accessories. No improvised pipe support solutions shall be allowed.
- F. No-hub Pipe & Fitting Restraints
  - 1. Installation of no-hub piping shall follow CISPI 301-21. Horizontal pipe and fittings 5 inches and larger must be suitale braced to prevent horizontal movement. This shall be done at every branch opening or change of direction by the use of braces, blocks, rodding or other suitable methods, to prevent movement or joint seprataion.

# PART 3 EXECUTION

#### 3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges, grooved joint couplings, or unions.

#### 3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions. Cast iron soil pipe installed in accordance to CISPI's Handbook.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Provide access where valves and fittings are not exposed. Coordinate size and location of access door with Division 01.
- I. Establish elevations of buried piping outside the building to ensure not less than 4 ft of cover.
- J. Provide support for utility meters in accordance with requirements of utility companies.
- K. Install valves with stems upright or horizontal, not inverted. See Section 22 0523.

- L. Install water piping to ASME B31.9.
- M. Slope water piping and arrange to drain at low points.
- N. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- O. Grooved joints shall be installed in accordance with the manufacturer's latest published instructions. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service. Gaskets shall be molded and produced by the grooved coupling manufacturer. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. Grooved coupling manufacturer's factory trained field representative shall provide on-site training for contractor's field personnel in the proper use of grooving tools, application of groove, and installation of grooved piping products. Factory trained representative shall periodically visit the jobsite to ensure best practices in grooved product installation are being followed. Contractor shall remove and replace any improperly installed products.
- P. Sleeve pipes passing through partitions, walls, and floors.
- Q. Pipe Stand Installation: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
- R. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- S. Pipe Hangers and Supports:
  - 1. Install in accordance with ASME B31.9.
  - 2. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
  - 3. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
  - 4. Install lateral bracing with pipe hangers and supports to prevent swaying.
- T. Pipe Sleeve-Seal Systems:
  - 1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.
  - 2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.
  - 3. Locate piping in center of sleeve or penetration.
  - 4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.
  - 5. Tighten bolting for a watertight seal.
  - 6. Install in accordance with manufacturer's recommendations.
- U. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- V. In general, all piping, and similar items shall be installed concealed from view above ceiling, in partitions, shafts, chases, unless otherwise indicated.
- W. Where pipes are in partitions, furred out spaces and chases, obtain information as to their exact location and size and install work so as to be entirely concealed in allotted space. If conflicts arise making this impossible, obtain instructions from Architect/Engineer before proceeding with work.

- X. Where there is evidence that plumbing work will interfere with other work, assist in working out space conditions and/or structure, make necessary adjustments to accommodate work.
- Y. Plumbing work installed before coordinating with other work so as to cause interference with other work to be changed to correct such condition without additional cost to Owner.
- Z. Appliances and equipment to be installed and connected with best engineering practices and in accordance with manufacturer's instructions and recommendations. Piping, valves, connections and other like items recommended by manufacturer or as required for proper operation to be provided without additional cost to Owner.
- AA. In no case will any pipe, conduit or duct be installed where it is supported on or suspended from another pipe, conduit or duct.
- BB. Polypropylene Pipe:
  - 1. Integration with other systems:
    - a. General
      - When integrating PP-R piping systems with other systems or components not made of PP-R (e.g. components not made of PP-R like valves, pumps, other piping, check valves, strainers, etc.), Contractor shall ensure the operating parameters for PP-R will not damage other materials in the system or vice versa.
      - 2) Contractor shall verify all parts of the system as compatible with the medium being carried before installation. PP-R pipe does not require treatment to protect it from corrosion. Metals (ferrous and non-ferrous) in the system may be susceptible to corrosion. Provide water treatment to protect system metals.
      - 3) Contractor shall not mix PP-R pipe with other piping systems in conditions that will cause the other system or components to fail.
      - The conditions described here are only of concern in domestic hot water systems. For domestic cold water systems no additional requirements or actions are necessary.
    - b. Domestic Hot Water Return System (DHWR)
      - 1) When there is copper piping used in conjunction with PP-R in a DHWR system, take care to ensure the operating conditions will not cause degradation or erosion/corrosion of the copper.
      - 2) Follow the Copper Development Association guidelines (CDA Publication A4015-14/16: The Copper Tube handbook www.copper.org).
      - 3) Sustained high levels of copper in DHWR piping can damage components within the system, even PP-R.
      - 4) The maximum HW-temperature within any part of the system / loop shall not exceed 140°F (60°C).
      - 5) Importantly, the maximum temperature used must not exceed the rating of the pipe for the operating pressure as set by the manufacturer.
      - 6) Flow rates in a PP-R DHWR system should not exceed 1.5 ft./sec (0.5 m/s) anywhere in the system, except in some special cases where velocities up to 3 ft./sec (1 m/s) are needed to achieve proper flow temperature.
      - 7) When re-piping an existing DHWR-system originally installed in copper tubing, ensure all possible copper is replaced. If some copper remains as part of the system, Contractor shall strictly follow the rules and guidelines of the Copper Development Association.

- 8) When adding PP-R to an existing copper system in a DHWR-application, the level of copper in the water shall be tested by the Contractor prior to start of work. These levels shall not exceed 0.1 mg/L (ppm). Higher levels of total copper indicate that the copper pipe is corroding /eroding due to system and/or water conditions. Do not install PP-R in the system under these conditions.
- 2. Smoke and Fire Ratings:
  - a. Where a Plenum-rated Piping System is needed, the pipe shall be wrapped and/or insulated with standard fiberglass or mineral wool pipe insulation, field installed.
    - 1) For domestic systems the entire piping system must be wrapped or insulated.
  - b. The pipe, wrap or insulation as a system shall meet the requirements of CAN/ULC-S102.2-03, ASTM E84 or UL 2846.
  - c. The system shall have a Flame Spread Classification of less than 25 and Smoke Development rating of less than 50.
  - d. Piping shall be insulated per Specification 22 0719 Plumbing Piping Insulation.
- 3. UV Protection:
  - a. Where indicated on the drawings that the pipe will be exposed to direct UV light for more than 30 days, it shall be provided with a Factory applied, UV-resistant coating or alternative UV protection.
  - b. Note that molded fittings 1/2" 4" do not need to have UV protection. Larger molded fittings (6"-10") and segmented fittings will need to be protected from UV.
- 4. Installation:
  - a. Installers shall be trained and certified to install the pipe according to the manufacturer's guidelines.
  - b. Installation must be accomplished with the proper tools for installing PP-R piping following manufacturer's instructions.
  - c. Install piping free of sags and bends.
  - d. Fire stopping shall be provided to both be compatible with the PP-R Piping and meet the requirements of ASTM E 814 or ULC S115, "Fire Tests of Through-Penetration Firestops". Pipe insulations or fire resistive coating shall be removed where the pipe passes through a fire stop and, if required by the firestop manufacturer, for 3 inches beyond the firestop outside of the fire barrier.
  - e. When installed in systems with pumps in excess of 3.0 HP, piping shall be protected from excessive heat generated by operating the pump at shut-off conditions. Where the possibility exists that the pump will operate with no flow, the protection method shall be a temperature relief valve or comparable level of protection, set to a maximum temperature of 185°F.
  - f. PP-R can absorb small vibrations, so isolators are not required if the pipe (pipe diameters 4" and less) has some limited mobility on either side of the pump or equipment to which it is connected. For pipe sizes 6" and above prvide vibration isolation couplings or connectors at pipe/pump connections.
  - g. If heat tracing is specified for the piping, it should be installed on the pipe exterior. It must be suitable for use with plastic piping and be self-regulating to ensure the surface temperature of the pipe and fittings will not exceed 158°F (70°C).
  - h. Expansion and Contraction:
    - 1) Provide expansion and contraction controls, guides and anchors to take into account the expansion and contraction of the pipe. Provide expansion loops or offsets as required and as indicated in the Manufacturer's Design Guide.
    - 2) While PP-R MF (Faser) piping can absorb most of their own expansion stresses, this can cause the pipe to bow or bend.
    - 3) Install anchor points at least every 120 feet.

- 4) Install expansion loop or offset between each anchor point. Expansion device must be able to absorb all of the stresses between the two anchor points. Refer to manufacturer's published instructions, formulas and calculations
- 5) Non-MF pipes used for hot applications shall have expansion controls every 30 feet of straight runs.
- 6) Vertical risers of MF piping shall be anchored at each floor. Piping 2" and smaller shall have mid-story guides installed to prevent bowing.
- 7) Provide anchor point at branch take-off in vertical riser of MF piping.
- i. Pressure/Leak Testing:
  - 1) While still accessible all piping shall be pressure/leak tested to the manufacturer's standards.
  - 2) Tests shall be carried out using water, compressed air or a mixture of the two. The test pressure shall be as indicated in the pressure leak testing procedures required by the manufacturer.
  - 3) Any leaks detected shall be repaired at the contractor's expense by removing the leaking part and replacing with new parts welded per the pipe manufacturer's guidelines. Retest piping or portion thereof until satisfactory results are obtained. See www.aquatherm.com for additional details and forms.
  - 4) In the event that water is not available for testing it shall be permissible to use compressed air as a testing medium. Contact the engineering department of the manufacturer for guidance. Follow all precautionary procedures recommended by the piping manufacturer.
  - 5) Prepare reports for tests and submit to Manufacturer to obtain warranty

## 3.03 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

## 3.04 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/8 inch per foot slope; 1/4 inch per foor slope for piping serving low flow fixtures.
- B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

## 3.05 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed, and clean.
- B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.
- I. Polypropylene Pipe:

- 1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
- 2. The pipes shall be flushed with cold water after finishing the installation. Flush the system until the water runs clear of debris and dirt.
- 3. Clean, flush and disinfect potable water piping system following the guidelines of the manufacturer.
- 4. Inspect and test piping systems following procedures of authorities having jurisdiction and as specified by the piping system manufacturer.
- 5. Do not add additional chlorine, chloramine, chlorine dioxide, on-site copper ion generation or other disinfectants to the PP-R system without first consulting with piping manufacturer.

## END OF SECTION 22 1005

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#### SECTION 22 4000 PLUMBING FIXTURES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

A. Bi-level, electric water coolers.

## 1.02 RELATED REQUIREMENTS

- A. Section 01 1000 Summary: Owner-furnished fixtures.
- B. Section 22 1005 Plumbing Piping.
- C. Section 22 1006 Plumbing Piping Specialties.

## 1.03 REFERENCE STANDARDS

- A. ADA Standards 2010 ADA Standards for Accessible Design; 2010.
- B. ASHRAE Std 18 Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2008 (Reaffirmed 2013).
- C. ASME A112.18.1 Plumbing Supply Fittings; 2018, with Errata.
- D. ASME A112.19.2 Ceramic Plumbing Fixtures; 2018, with Errata.
- E. ASME A112.19.3 Stainless Steel Plumbing Fixtures; 2022.
- F. ASME A112.19.5 Flush Valves and Spuds for Water Closets, Urinals, and Tanks; 2022.
- G. ASSE 1070 Performance Requirements for Water Temperature Limiting Devices; 2020.
- H. IAPMO Z124 Plastic Plumbing Fixtures; 2022, with Editorial Revision.
- I. NSF 61 Drinking Water System Components Health Effects; 2022, with Errata.
- J. NSF 372 Drinking Water System Components Lead Content; 2022.

# 1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 Product Requirements for additional provisions.
  - 2. Extra Faucet Washers: Two sets of each type and size.
  - 3. Extra Toilet Seats: One of each type and size.
  - 4. Flush Valve Service Kits: One for each type and size.

## 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on-site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

## 1.06 WARRANTY

- A. See Section 01 7800 Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty for electric water cooler refrigerantion system.

# PART 2 PRODUCTS

# 2.01 GENERAL REQUIREMENTS

23 0019 01 Anchor Bay Clean Water Act Plmb Reno

A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

## 2.02 REGULATORY REQUIREMENTS

- A. Comply with applicable codes for installation of plumbing systems.
- B. Perform work in accordance with local health department regulations.

## 2.03 BI-LEVEL, ELECTRIC, FILTERED WATER COOLERS WITH BOTTLE FILLER

- A. Manufacturers:
  - 1. Elkay Manufacturing Company: www.elkay.com/#sle.
  - 2. Haws Corporation: www.hawsco.com/#sle.
  - 3. Murdock Manufacturing, Inc: www.murdockmfg.com/#sle.
  - 4. Oasis International: www.oasiscoolers.com/#sle.
  - 5. Substitutions: See Section 01 6000 Product Requirements.
- B. Water Cooler: Bi-level, electric, mechanically refrigerated; mounting as specified on Schedules, ADA compliant; elevated anti-squirt safety bubbler with stream guard, automatic stream regulator, push button, mounting bracket; integral air cooled condenser. Unit shall have hinged access from front. Stainless steel finish. Visual filter monitor.
  - 1. Capacity: 8 gph of 50 degrees F water with inlet at 80 degrees F and room temperature of 90 degrees F, when tested in accordance with ASHRAE Std 18.
  - 2. Electrical: 115 VAC, 60 Hertz compressor, 6 foot cord and plug for connection to electric wiring system including grounding connector.
- C. Bottle Filler: Materials to match fountain.
- D. Filter: NSF 42, 53 and 372. Quick disconnect, 1/4 turn installation with automatic inlet shut-off valve. Filters two prevalent PFAS chemicals, lead, Class 1 particulates, cysts and chlorine taste and order.

# PART 3 EXECUTION

## 3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Examine floors and substrates and conditions under which fixture work is to be accomplished. Correct any incorrect locations of piping and other unsatisfactory conditions for installation of plumbing fixtures. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.
- D. Inspect fixtures and accessories that are to be removed and relocated. Damaged or blemished items shall be brought to Architect's/Engineer's attention before reinstalling.

#### 3.02 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

## 3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide supplies to fixtures with stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Piping exposed to view shall be chrome plated.

## 3.04 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.
- B. Adjust or replace washers to prevent leaks at faucets and stops.

## 3.05 ADJUSTING

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

## 3.06 CLEANING

A. Clean plumbing fixtures and equipment.

## 3.07 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

## 3.08 FIELD QUALITY CONTROL

- A. Upon completion of installation of plumbing fixtures and after units are water pressurized, test fixtures to demonstrate capability and compliance with requirements. When possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.
- B. Inspect each installed unit for damage to finish. If feasible, restore and match finish to original at site; otherwise, remove fixture and replace with new unit. Feasibility and match to be judged by Architect/Engineer. Remove cracked or dented units and replace with new units.

## END OF SECTION 22 4000

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#### SECTION 26 0005 BASIC ELECTRICAL REQUIREMENTS

## **PART 1 GENERAL**

## 1.01 RELATED DOCUMENTS

- A. This section applies to all sections of Division 26 and Division 28.
- B. Drawings and general provisions of the contract, including Division 00 and Division 01 specification sections, apply to work of this section.
- C. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on drawings and/or herein, including all labor, materials, equipment and incidentals necessary and required for their completion.
- D. The items in this section are supplementary to the requirements set forth in other portions of the specifications as indicated under Item "A" above.

## 1.02 DRAWINGS

- A. The drawings show the location and general arrangement of equipment, electrical systems and related items. They shall be followed as closely as elements of the construction will permit.
- B. Examine the drawings of other trades and verify the conditions governing the work on the job site. Arrange work accordingly, providing such fittings, conduit, junction boxes and accessories as may be required to meet such conditions.
- C. Deviations from the drawings, with the exception of minor changes in routing and other such incidental changes that do not affect the functioning or serviceability of the systems, shall not be made without the written approval of the Architect/Engineer.
- D. The architectural and structural drawings take precedence in all matters pertaining to the building structure, mechanical drawings in all matters pertaining to mechanical trades and electrical drawings in all matters pertaining to electrical trades. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the Architect/Engineer for resolution.

## 1.03 INSPECTION OF SITE

- A. Visit the site, examine and verify the conditions under which the work must be conducted before submitting proposal.
- B. The submitting of a proposal implies that the contractor has visited the site and understands the conditions under which the work must be conducted.

#### 1.04 TEMPORARY FACILITIES

A. Provide and remove upon completion of the project, in accordance with the general conditions, a complete temporary electrical and telephone service during construction.

## 1.05 ALTERNATES AND SUBSTITUTIONS

A. Refer to Division 01 - General Requirements for procedures.

## 1.06 GUARANTEE

A. Contractor guarantees that the installation is free from defects and agrees to replace or repair, any part of this installation which becomes defective within a period of one year following final acceptance, unless noted otherwise, provided that such failure is due to defects in the equipment, material or installation or to follow the specifications and drawings. File with the Owner any and all guarantees from the equipment manufacturers.

## 1.07 CODES, PERMITS AND FEES

- A. Unless otherwise indicated, all required permits, licenses, inspections, approvals and fees for electrical work shall be secured and paid for by the contractor. All work shall conform to all applicable codes, rules and regulations. Applicable publications listed in all sections of Division 26 shall be the latest issue, unless otherwise noted.
- B. Rules of local utility companies shall be complied with. Check with the utility company supplying service to the installation and determine all devices including, but not limited to, all current and potential transformers, meter boxes, C.T. cabinets and meters which will be required and include the cost of all such items in proposal.
- C. All work shall be executed in accordance with the rules and regulations set forth in local and state codes. Prepare any detailed drawings or diagrams which may be required by the governing authorities. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern.

## 1.08 STANDARDS OF MATERIAL AND WORKMANSHIP:

- A. All materials shall be new, unless noted otherwise. The electrical and physical properties of all materials, and the design, performance characteristics, and methods of construction of all items of equipment, shall be in accordance with the latest issue of the various, applicable standard specifications of the following recognized authorities:
  - 1. A.N.S.I. American National Standards Institute
  - 2. A.S.T.M. American Society for Testing Materials
  - 3. I.C.E.A. Insulated Cable Engineers Association
  - 4. I.E.E.E. Institute of Electrical and Electronics Engineers
  - 5. N.E.C. National Electrical Code (NFPA 70)
  - 6. N.E.C.A. National Electrical Contractors Association
  - 7. N.E.M.A. National Electrical Manufacturer's Association
  - 8. N.F.P.A. National Fire Protection Association
  - 9. U.L. Underwriters Laboratories, Inc.
- B. Perform all work in a first class and workmanlike manner, in accordance with the latest accepted standards and practices for the Trades involved.
- C. All equipment of the same or similar systems shall be by the same manufacturer.

# 1.09 RECORD DRAWINGS

- A. Refer to Division 01 General Requirements for procedures. All literature shall be furnished in accordance with requirements listed in Division 01.
- B. Revisions to equipment being provided by other trades shall be coordinated with the contractor(s) responsible. Any and all revisions to documents which are necessary to facilitate installation of such equipment shall be captured in Record Documents as stated in item A above.
- C. Contractor shall provide the following record drawings as part of the Project closeout document process:
  - 1. Contract Documents, specifications and submittals, indicating "As-Built" conditions and actual products selected for use.
  - 2. Product and Maintenance manuals for all equipment listed within this specification manual and in Contract Documents. Provide with parts lists as applicable.

## 1.10 SUBMITTALS

- A. Refer to Division 01 General Requirements for procedures.
- B. Contractor shall provide submittals where items are referred to by symbolic designation on the drawings. All submittals shall bear the same designation (light fixtures, wiring devices, etc.). Refer to other sections of the electrical specifications for additional requirements.

- C. Engineer WILL NOT REVIEW:
  - 1. Submittals not specified.
  - 2. Submittals which do not indicate optional equipment being provided.
  - 3. Submittals not reviewed by Contractor; including Contractor stamp with signature comments.
  - 4. Submittals made after work is delivered to site and/or installed.
  - 5. Submittal resubmissions unless resubmission is required by Architect/Engineer.

## 1.11 MANUFACTURERS LISTED

- A. The listing of specific manufacturers does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed are not relieved from meeting these specifications in their entirety.
- B. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer five (5) days prior to bid date.

## 1.12 USE OF EQUIPMENT

- A. The use of any equipment, or any part thereof for purposes other than testing even with the Owner's consent, shall not be construed to be an acceptance of the work on the part of the Owner, nor be construed to obligate the Owner in any way to accept improper work or defective materials.
- B. Do not use Owner's light fixtures for temporary lighting except as allowed and directed by the Owner.

## PART 2 PRODUCTS - NOT USED

#### PART 3 EXECUTION

## 3.01 INSTALLATION OF EQUIPMENT

- A. Install all equipment in strict accordance with all directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the drawings and specifications, report such conflicts to the Architect/Engineer for resolution.
- B. Equipment location shall be as close as practical to locations shown on the drawings.
- C. Working clearances shall not be less than specified in NFPA 70 (National Electric Code).

## 3.02 COORDINATION

A. Install work to avoid interference with work of other trades including, but not limited to, architectural and mechanical trades. Remove and relocate any work that causes an interference at Contractor's expense. Disputes regarding the cause of an interference will be resolved by the Construction Manager or Architect/Engineer.

## 3.03 CUTTING, PATCHING AND DAMAGE TO OTHER WORK

- A. Refer to Division 01 General Requirements and Division 02 Existing Conditions.
- B. All cutting, patching and repair work shall be performed by the contractor through approved, qualified subcontractors. Contractor shall include full cost of same in bid.

#### 3.04 EQUIPMENT CONNECTIONS

A. Make connections to equipment, motors, lighting fixtures, and other items included in the work in accordance with the approved shop drawings and rough-in measurements furnished by the manufacturers of the particular equipment furnished. All additional connections not shown on the drawings, but called out by the equipment manufacturer's shop drawings shall be provided.

#### 3.05 ACCESS DOORS AND PANELS

A. Refer to Division 08 - Openings; Provide access doors in locations as required per N.E.C. Coordinate locations with architectural trades.

## 3.06 CLEANING

- A. Refer to Division 01 General Requirements; All equipment shall be cleaned as frequently as necessary through the construction process and again prior to project completion.
- B. Final cleanup shall include, but not be limited to, washing of fixture lenses or louvers, switchboards, substations, motor control centers, panels, etc. Fixture reflectors and lenses or louvers shall be left with no water marks or cleaning streaks.

## 3.07 DELIVERY, STORAGE AND PROTECTION OF EQUIPMENT AND MATERIALS

- A. Refer to Division 01 General Requirements; All equipment and materials shall be delivered, stored and secured per manufacturer's recommendations.
- B. On-site storage shall be coordinated with Construction Manager and be performed in a manner as to avoid damage, deterioration and loss.

#### 3.08 DRAWINGS AND MEASUREMENTS

A. Electrical drawings are not intended to be scaled for rough-in measurements nor to serve as submittals. Field measurements necessary for ordering materials and fitting the installation to the building construction and arrangement shall be taken by the Contractor.

## END OF SECTION 26 0005

#### SECTION 26 0505 SELECTIVE DEMOLITION FOR ELECTRICAL

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

A. Electrical demolition and extension of existing electrical work.

## 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements.
- C. Section 26 0005 Basic Electrical Requirements.

## PART 2 PRODUCTS

## 2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

## PART 3 EXECUTION

## 3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Beginning of demolition means installer accepts existing conditions.

## 3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
  - 1. Obtain permission from Owner at least 24 hours before partially or completely disabling system.
  - 2. Make temporary connections to maintain service in areas adjacent to work area.
- E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
  - 1. Notify Owner before partially or completely disabling system.
  - 2. Notify local fire service.
  - 3. Make notifications at least 24 hours in advance.
  - 4. Make temporary connections to maintain service in areas adjacent to work area.

## 3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
  - 1. PCB-containing electrical equipment, including transformers, capacitors, and switches.
  - 2. PCB- and DEHP-containing lighting ballasts.

- 3. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- F. Disconnect and remove abandoned panelboards and distribution equipment.
- G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- H. Repair adjacent construction and finishes damaged during demolition and extension work.
- I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

## 3.04 CLEANING AND REPAIR

- A. See Division 01 General Requirements.
- B. Clean and repair existing materials and equipment that remain or that are to be reused.
- C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
- D. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

# END OF SECTION 26 0505

#### SECTION 26 0519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Oxide inhibiting compound.
- F. Wire pulling lubricant.
- G. Cable ties.
- H. Firestop sleeves.

## 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements.
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements, cutting and patching requirements, and repairs.
- C. Division 07 Thermal and Moisture Protection: Firestopping.
- D. Section 26 0005 Basic Electrical Requirements.
- E. Section 26 0505 Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- F. Section 26 0526 Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- G. Section 26 0536 Cable Trays for Electrical Systems: Additional installation requirements for cables installed in cable tray systems.
- H. Section 26 0553 Identification for Electrical Systems: Identification products and requirements.
- I. Section 28 4600 xxxFire Detection and Alarm: Fire alarm system conductors and cables.
- J. Division 31 Earthwork: Excavating, bedding, and backfilling.

# 1.03 REFERENCE STANDARDS

- A. ASTM B3 Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
- B. ASTM B8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).
- C. ASTM B33 Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).
- D. ASTM B787/B787M Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).
- E. NECA 1 Standard for Good Workmanship in Electrical Construction; 2023.
- F. NEMA WC 70 Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.
- G. NETA ATS Standard for Acceptance Testing Specifications for Electrical Power Equipment And Systems; 2025.

- H. NFPA 70 National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 44 Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- J. UL 83 Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- K. UL 486A-486B Wire Connectors; Current Edition, Including All Revisions.
- L. UL 486C Splicing Wire Connectors; Current Edition, Including All Revisions.
- M. UL 486D Sealed Wire Connector Systems; Current Edition, Including All Revisions.

## 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
  - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
  - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

## 1.05 SUBMITTALS

A. Contractor shall provide submittals for equipment listed herein. Refer to Division 01 for submittal procedures.

## 1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

# 1.07 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

# PART 2 PRODUCTS

## 2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.

# 2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductor Material:
  - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
  - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
  - 3. Tinned Copper Conductors: Comply with ASTM B33.
- H. Minimum Conductor Size:
  - 1. Branch Circuits: 12 AWG.
    - a. Exceptions:
      - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
      - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
- I. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- J. Conductor Color Coding:
  - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
  - 2. Color Coding Method: Integrally colored insulation.
  - 3. Color Code:
    - a. 208Y/120 V, 3 Phase, 4 Wire System:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Phase C: Blue.
      - 4) Neutral/Grounded: White.
    - b. Equipment Ground, All Systems: Green.
    - c. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.

## 2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
  - 1. Copper Building Wire:
    - a. Cerro Wire LLC: www.cerrowire.com.
    - b. Encore Wire Corporation: www.encorewire.com.
    - c. General Cable Technologies Corporation: www.generalcable.com.
    - d. Southwire Company: www.southwire.com.
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
  - Feeders and Branch Circuits:
    - a. Size 10 AWG and Smaller: Stranded.
    - b. Size 8 AWG and Larger: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation:

1.

1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

#### 2.04 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 26 0526.
- C. Wiring Connectors for Splices and Taps:
  - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
  - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- D. Wiring Connectors for Terminations:
  - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
  - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
  - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
  - 4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
- E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
- H. Mechanical Connectors: Provide bolted type or set-screw type.
- I. Compression Connectors: Provide circumferential type or hex type crimp configuration.

## PART 3 EXECUTION

## 3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

#### 3.03 INSTALLATION

- A. Circuiting Requirements:
  - 1. Unless dimensioned, circuit routing indicated is diagrammatic.
  - 2. When circuit destination is indicated without specific routing, determine exact routing required.
  - 3. Arrange circuiting to minimize splices.

- 4. Include circuit lengths required to install connected devices within 10 ft of location indicated.
- 5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and powerlimited circuits in accordance with NFPA 70.
- 6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
- 7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted.
- 8. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- 9. Provide oversized neutral/grounded conductors where indicated and as specified below.
  - a. Provide 200 percent rated neutral for feeders fed from K-rated transformers.
  - b. Provide 200 percent rated neutral for feeders serving panelboards with 200 percent rated neutral bus.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Installation in Raceway:
  - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
  - 2. Pull all conductors and cables together into raceway at same time.
  - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
  - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- E. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- F. Terminate cables using suitable fittings.
- G. Install conductors with a minimum of 12 inches of slack at each outlet.
- H. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.
- I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- J. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- K. Make wiring connections using specified wiring connectors.
  - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
  - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
  - 3. Do not remove conductor strands to facilitate insertion into connector.
  - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
  - 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

- 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
- M. Insulate ends of spare conductors using vinyl insulating electrical tape.
- N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 07.
- O. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

## 3.04 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
- C. Correct deficiencies and replace damaged or defective conductors and cables.

## END OF SECTION 26 0519

## SECTION 26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground bars.
- E. Ground rod electrodes.

## 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements, cutting and patching requirements, repairs.
- C. Section 26 0005 Basic Electrical Requirements
- D. Section 26 0519 Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- E. Section 26 0536 Cable Trays for Electrical Systems: Additional grounding and bonding requirements for cable tray systems.
- F. Section 26 0553 Identification for Electrical Systems: Identification products and requirements.
- G. Section 26 5600 Exterior Lighting: Additional grounding and bonding requirements for polemounted luminaires.
- H. Division 31 Earthwork: Excavating, trenching and fill.

## 1.03 REFERENCE STANDARDS

- A. IEEE 81 IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.
- B. NECA 1 Standard for Good Workmanship in Electrical Construction; 2023.
- C. NEMA GR 1 Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.
- D. NETA ATS Standard for Acceptance Testing Specifications for Electrical Power Equipment And Systems; 2025.
- E. NFPA 70 National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 467 Grounding and Bonding Equipment; Current Edition, Including All Revisions.

# 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Verify exact locations of underground metal water service pipe entrances to building.
  - 2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
  - 3. Notify Strategic Energy Solutions, Inc. of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not install ground rod electrodes until final backfill and compaction is complete.

#### 1.05 SUBMITTALS

- A. Contractor shall provide submittals for equipment listed herein. Refer to Division 01 for submittal procedures.
- B. Project Record Documents: Record actual locations of grounding electrode system components and connections.

## PART 2 PRODUCTS

## 2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
- B. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- E. Grounding System Resistance:
  - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Engineer. Precipitation within the previous 48 hours does not constitute normally dry conditions.
  - 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
  - 3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.
- F. Grounding Electrode System:
  - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
    - a. Provide continuous grounding electrode conductors without splice or joint.
    - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
  - 2. Metal Underground Water Pipe(s):
    - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
    - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
    - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
  - 3. Concrete-Encased Electrode:
    - a. Provide connection to concrete-encased electrode consisting of not less than 20 feet of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
  - 4. Ground Ring:

- a. Provide a ground ring encircling the building or structure consisting of bare copper conductor not less than 2 AWG in direct contact with earth, installed at a depth of not less than 30 inches.
- b. Where location is not indicated, locate ground ring conductor at least 24 inches outside building perimeter foundation.
- c. Provide ground enhancement material around conductor.
- d. Provide connection from ground ring conductor to:
  - 1) Perimeter columns of metal building frame.
  - 2) Ground rod electrodes located as indicated.
- 5. Ground Rod Electrode(s):
  - a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
  - b. Space electrodes not less than 10 feet from each other and any other ground electrode.
  - c. Where location is not indicated, locate electrode(s) at least 5 feet outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.
- 6. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
- 7. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
  - a. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
  - b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
  - c. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.
- G. Bonding and Equipment Grounding:
  - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
  - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
  - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
  - 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
  - 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
  - 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
  - 7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
    - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
    - b. Metal gas piping.
  - 8. Provide bonding for metal building frame.

- 9. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.
- H. Cable Tray Systems: Also comply with Section 26 0536.
- I. Pole-Mounted Luminaires: Also comply with Section 26 5600.

# 2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
  - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
  - 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
  - 1. Use insulated copper conductors unless otherwise indicated.
    - a. Exceptions:
      - 1) Use bare copper conductors where installed underground in direct contact with earth.
      - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
  - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
  - 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
  - 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
  - 4. Manufacturers Mechanical and Compression Connectors:
    - a. Advanced Lightning Technology (ALT): www.altfab.com
    - b. Burndy LLC: www.burndy.com
    - c. Harger Lightning & Grounding: www.harger.com
    - d. nVent ERICO; \_\_\_\_: www.nvent.com/
    - e. Thomas & Betts Corporation: www.tnb.com
  - 5. Manufacturers Exothermic Welded Connections:
    - a. Burndy LLC: www.burndy.com
    - b. nVent ERICO; Cadweld: www.nvent.com
    - c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com
- D. Ground Bars:
  - 1. Description: Copper rectangular ground bars with mounting brackets and insulators.
  - 2. Size: As indicated.
  - 3. Holes for Connections: As indicated or as required for connections to be made.
  - 4. Manufacturers:
    - a. Advanced Lightning Technology (ALT): www.altfab.com
    - b. Harger Lightning & Grounding: www.harger.com
    - c. nVent ERICO: www.nvent.com/
    - d. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com
- E. Ground Rod Electrodes:
  - 1. Comply with NEMA GR 1.
  - 2. Material: Copper-bonded (copper-clad) steel.
  - 3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.

- 4. Where rod lengths of greater than 10 feet are indicated or otherwise required, sectionalized ground rods may be used.
- 5. Manufacturers:
  - a. Advanced Lightning Technology (ALT): www.altfab.com/#sle.
  - b. Galvan Industries, Inc: www.galvanelectrical.com/#sle.
  - c. Harger Lightning & Grounding: www.harger.com/#sle.

# PART 3 EXECUTION

## 3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.

## 3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
- D. Make grounding and bonding connections using specified connectors.
  - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
  - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
  - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
  - 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
  - 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 26 0553.

# 3.03 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- D. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

# END OF SECTION 26 0526

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#### SECTION 26 0529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

## PART 1 GENERAL

# 1.01 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

## 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements, and cutting and patching requirements.
- C. Division 03 Concrete: Concrete equipment pads.
- D. Section 26 0005 Basic Electrical Requirements
- E. Section 26 0533.13 Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
- F. Section 26 0536 Cable Trays for Electrical Systems: Additional support and attachment requirements for cable tray.
- G. Section 26 0533.16 Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- H. Section 26 2513 Low-Voltage Busways: Additional support and attachment requirements for busway.
- I. Section 26 5100 Interior Lighting: Additional support and attachment requirements for interior luminaires.
- J. Section 26 5600 Exterior Lighting: Additional support and attachment requirements for exterior luminaires.

## 1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- C. ASTM B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.
- D. MFMA-4 Metal Framing Standards Publication; 2004.
- E. NECA 1 Standard for Good Workmanship in Electrical Construction; 2023.
- F. NFPA 70 National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 5B Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

## **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
  - 2. Coordinate work to provide additional framing and materials required for installation.
  - 3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
- 4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
- 5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Division 03.

#### 1.05 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### PART 2 PRODUCTS

#### 2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
  - 1. Comply with the following. Where requirements differ, comply with most stringent. a. NFPA 70.
    - b. Requirements of authorities having jurisdiction.
  - 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
  - 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
  - 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
  - 5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
  - 6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
    - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
    - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
  - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
  - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
  - 1. Manufacturers:
    - a. ABB: www.electrification.us.abb.com
    - b. Eaton Corporation: www.eaton.com
    - c. Emerson Electric Co; O-Z/Gedney: www.emerson.com
    - d. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com
    - e. nVent; Caddy: www.nvent.com
- D. Metal Channel/Strut Framing Systems:
  - 1. Manufacturers:
    - a. ABB: www.electrification.us.abb.com/#sle.
    - b. Atkore International Inc; Unistrut: www.unistrut.us/#sle.
    - c. Eaton Corporation: www.eaton.com/#sle.
  - 2. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.

- 3. Comply with MFMA-4.
- 4. Channel/Strut Used as Raceway, Where Indicated: Listed and labeled as complying with UL 5B.
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
  - 1. Minimum Size, Unless Otherwise Indicated or Required:
    - a. Equipment Supports: 1/2-inch diameter.
    - b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
    - c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
    - d. Trapeze Support for Multiple Conduits: 3/8-inch diameter.
    - e. Outlet Boxes: 1/4-inch diameter.
    - f. Luminaires: 1/4-inch diameter.
- F. Nonpenetrating Rooftop Supports for Low-Slope Roofs:
  - 1. Manufacturers:
    - a. Atkore International Inc; Unistrut: www.unistrut.us/#sle.
    - b. Eaton Corporation: www.eaton.com/#sle.
    - c. nVent; Caddy: www.nvent.com/#sle.
    - d. PHP Systems/Design: www.phpsd.com/#sle.
  - 2. Description: Steel pedestals with thermoplastic or rubber bases that rest on top of roofing membrane, not requiring attachment to roof structure and not penetrating roofing assembly, with support fixtures as specified.
  - 3. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
  - 4. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.
  - 5. Mounting Height: Provide minimum clearance of 6 inches under supported component to top of roofing.
- G. Anchors and Fasteners:
  - 1. Manufacturers Mechanical Anchors:
    - a. Dewalt: anchors.dewalt.com
    - b. Hilti, Inc: www.hilti.com
    - c. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com
    - d. Simpson Strong-Tie Company Inc: www.strongtie.com
  - 2. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.

#### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install hangers and supports in accordance with NECA 1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:

- 1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
- 2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
- 3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
- 4. Unless otherwise indicated, mount floor-mounted equipment on properly sized 4 inch high concrete pad constructed in accordance with Division 03.
- 5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Conduit Support and Attachment: See Section 26 0533.13 for additional requirements.
- I. Cable Tray Support and Attachment: See Section 26 0536 for additional requirements.
- J. Box Support and Attachment: See Section 26 0533.16 for additional requirements.
- K. Busway Support and Attachment: See Section 26 2513 for additional requirements.
- L. Interior Luminaire Support and Attachment: See Section 26 5100 for additional requirements.
- M. Exterior Luminaire Support and Attachment: See Section 26 5600 for additional requirements.
- N. Secure fasteners in accordance with manufacturer's recommended torque settings.
- O. Remove temporary supports.
- P. Identify independent electrical component support wires above accessible ceilings, where permitted, with color distinguishable from ceiling support wires in accordance with NFPA 70.

#### 3.02 FIELD QUALITY CONTROL

- A. Inspect support and attachment components for damage and defects.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective support and attachment components.

#### END OF SECTION 26 0529

#### SECTION 26 0533.13 CONDUIT FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Aluminum rigid metal conduit (RMC).
- C. Flexible metal conduit (FMC).
- D. Galvanized steel electrical metallic tubing (EMT).
- E. Aluminum electrical metallic tubing (EMT).
- F. Rigid polyvinyl chloride (PVC) conduit.

#### 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements.
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements, cutting and patching requirements, and repairs.
- C. Division 03 Concrete: Concrete encasement of conduits.
- D. Division 07 Thermal and Moisture Protection: Firestopping.
- E. Section 26 0005 Basic Electrical Requirements
- F. Section 26 0519 Low-Voltage Electrical Power Conductors and Cables.
- G. Section 26 0526 Grounding and Bonding for Electrical Systems.
  1. Includes additional requirements for fittings for grounding and bonding.
- H. Section 26 0529 Hangers and Supports for Electrical Systems.
- I. Section 26 0533.16 Boxes for Electrical Systems.
- J. Section 26 0533.23 Surface Raceways for Electrical Systems.
- K. Section 26 0553 Identification for Electrical Systems: Identification products and requirements.
- L. Section 28 4600 xxxFire Detection and Alarm: Fire alarm wiring in conduit.
- M. Division 31 Earthwork: Excavating, trenching and fill.

#### 1.03 REFERENCE STANDARDS

- A. ANSI C80.1 American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.
- B. ANSI C80.3 American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.
- C. ANSI C80.5 American National Standard for Electrical Rigid Metal Conduit -- Aluminum (ERMC-A); 2020.
- D. NECA 1 Standard for Good Workmanship in Electrical Construction; 2023.
- E. NECA 101 Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.
- F. NECA 102 Standard for Installing Aluminum Rigid Metal Conduit; 2004.
- G. NECA 111 Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2017.
- H. NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- I. NEMA RN 1 Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Metal Conduit and Intermediate Metal Conduit; 2018.

- J. NEMA TC 2 Electrical Polyvinyl Chloride (PVC) Conduit; 2020.
- K. NEMA TC 3 Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.
- L. NFPA 70 National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. UL 1 Flexible Metal Conduit; Current Edition, Including All Revisions.
- N. UL 6 Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- O. UL 6A Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.
- P. UL 514B Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- Q. UL 651 Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
- R. UL 797 Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- S. UL 797A Electrical Metallic Tubing Aluminum and Stainless Steel; Current Edition, Including All Revisions.
- T. UL 2419 Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds; Current Edition, Including All Revisions.

#### PART 2 PRODUCTS

#### 2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
  - 1. Under Slab on Grade: Use galvanized steel rigid metal conduit or rigid PVC conduit.
  - 2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit or rigid PVC conduit.
  - 3. Exterior, Embedded Within Concrete: Use galvanized steel rigid metal conduit or rigid PVC conduit.
  - 4. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or schedule 80 rigid PVC conduit where emerging from underground.
  - 5. Where rigid polyvinyl (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows, galvanized steel intermediate metal conduit (IMC) elbows, stainless steel intermediate metal conduit (IMC) elbows, PVC-coated galvanized steel rigid metal conduit (RMC) elbows, or concrete-encased PVC elbows for bends.
  - 6. Where galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC) is installed in direct contact with earth where soil has resistivity of less than 2000 ohm-centimeters or is characterized as severely corrosive based on soils report or local experience, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection.

- 7. Where galvanized steel electrical metallic tubing (EMT) is installed in direct contact with earth, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection.
- 8. Where aluminum rigid metal conduit (RMC) or aluminum electrical metallic tubing (EMT) is installed in direct contact with earth, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection.
- 9. Where galvanized rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT) emerges from concrete into soil, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection for minimum of 4 inches on either side of where conduit emerges.
- D. Embedded Within Concrete:
  - 1. Within Slab on Grade (within structural slabs only where approved by Structural Engineer): Use galvanized steel rigid metal conduit or rigid PVC conduit.
  - 2. Within Slab Above Ground (within structural slabs only where approved by Structural Engineer): Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
- E. Concealed Within Masonry Walls: Use intermediate metal conduit (IMC) or electrical metallic tubing (EMT).
- F. Concealed Within Hollow Stud Walls: Use intermediate metal conduit (IMC) or electrical metallic tubing (EMT).
- G. Concealed Above Accessible Ceilings: Use intermediate metal conduit (IMC) or electrical metallic tubing (EMT).
- H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT).
- I. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit, aluminum rigid metal conduit, or electrical metallic tubing (EMT).
- J. Exposed, Interior, Subject to Physical Damage: Use stainless steel rigid metal conduit (RMC), aluminum rigid metal conduit (RMC), stainless steel intermediate metal conduit (IMC), stainless steel electrical metallic tubing (EMT), or schedule 80 rigid PVC conduit.
- K. Exposed, Interior, Subject to Severe Physical Damage: Use stainless steel rigid metal conduit (RMC), aluminum rigid metal conduit (RMC), or stainless steel intermediate metal conduit (IMC).
- L. Exposed, Exterior: Use PVC-coated galvanized steel rigid metal conduit or aluminum rigid metal conduit.
- M. Exposed, Exterior, Subject to Severe Physical Damage: Use stainless steel rigid metal conduit (RMC) or stainless steel intermediate metal conduit (IMC).
- N. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use intermediate metal conduit (IMC).
- O. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
  - 1. Maximum Length: 6 feet.
- P. Flexible Connections to Vibrating Equipment:
  - 1. Dry Locations: Use flexible metal conduit (FMC).
  - 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).

- 3. Vibrating equipment includes, but is not limited to:
  - a. Transformers.
  - b. Motors.
- Q. Fished in Existing Walls, Where Necessary: Use flexible metal conduit (FMC) or galvanized steel electrical metallic tubing (EMT).

#### 2.02 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70.
- B. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling mandrel through them.
- C. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- D. Provide products listed, classified, and labeled as suitable for purpose intended.
- E. Minimum Conduit Size, Unless Otherwise Indicated:
  - 1. Branch Circuits: 3/4 inch (21 mm) trade size.
  - 2. Flexible Connections to Luminaires: 3/8-inch trade size.
  - 3. Underground, Interior: 1 inch (27 mm) trade size.
  - 4. Underground, Exterior: 1-inch trade size.
- F. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

#### 2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Manufacturers:
  - 1. Allied Tube & Conduit: www.alliedeg.com
  - 2. Republic Conduit: www.republic-conduit.com
  - 3. Wheatland Tube, a Division of Zekelman Industries: www.wheatland.com
- B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- C. Fittings:
  - 1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
  - 2. Material: Use steel or malleable iron.
  - 3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

#### 2.04 ALUMINUM RIGID METAL CONDUIT (RMC)

- A. Manufacturers:
  - 1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
  - 2. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
  - 3. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.
- B. Description: NFPA 70, Type RMC aluminum rigid metal conduit complying with ANSI C80.5 and listed and labeled as complying with UL 6A.
- C. Fittings:
  - 1. Manufacturers:
    - a. ABB; T&B: www.electrification.us.abb.com/#sle.
    - b. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.us/#sle.
    - c. Bridgeport Fittings, LLC: www.bptfittings.com/#sle.
    - d. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.

- 2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6A.
- 3. Material: Use aluminum.
- 4. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

#### 2.05 FLEXIBLE METAL CONDUIT (FMC)

- A. Manufacturers:
  - 1. AFC Cable Systems, Inc: www.afcweb.com
  - 2. Electri-Flex Company: www.electriflex.com
  - 3. International Metal Hose: www.metalhose.com
- B. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.
- C. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Material: Use steel or malleable iron.

#### 2.06 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
  - 1. Allied Tube & Conduit: www.alliedeg.com
  - 2. Republic Conduit: www.republic-conduit.com
  - 3. Wheatland Tube, a Division of Zekelman Industries: www.wheatland.com
- B. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- C. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Material: Use steel or malleable iron.
  - 3. Connectors and Couplings: Use compression/gland or set-screw type. a. Do not use indenter type connectors and couplings.
  - 4. Damp or Wet Locations, Where Permitted: Use fittings listed for use in wet locations.
  - 5. Embedded Within Concrete, Where Permitted: Use fittings listed as concrete-tight. Fittings that require taping to be concrete-tight are acceptable.

#### 2.07 ALUMINUM ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT aluminum electrical metallic tubing listed and labeled as complying with UL 797A.
- B. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B; listed for use with aluminum EMT.
  - 2. Material: Use aluminum.
  - 3. Connectors and Couplings: Use compression/gland or set-screw type.
    - a. Do not use indenter type connectors and couplings.

#### 2.08 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Manufacturers:
  - 1. ABB; Carlon: www.carlon.com/#sle.
  - 2. Cantex Inc: www.cantexinc.com
  - 3. JM Eagle: www.jmeagle.com

- B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.
- C. Fittings:
  - 1. Manufacturer: Same as manufacturer of conduit to be connected.
  - 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

#### 2.09 ACCESSORIES

- A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil, 0.020 inch.
- B. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.
- C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- D. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.
- E. Foam Conduit Sealant:
  - 1. Removable, two-part, closed-cell foam, specifically designed for sealing conduit openings against water, moisture, gases, and dust.
  - 2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
  - 3. Rated to hold minimum of 10 ft water head pressure.
- F. Conduit Mechanical Seals:
  - 1. Listed as complying with UL 514B.
  - 2. Specifically designed for sealing conduit openings against water, moisture, gases, and dust.
  - 3. Suitable for sealing around conductors/cables to be installed.
- G. Sealing Compound for Hazardous/Classified Location Sealing Fittings: Listed for use with particular fittings to be installed.
- H. Sealing Systems for Concrete Penetrations:
  - 1. Sleeves: Provide water stop ring or cement coating that bonds to concrete to prevent water infiltration.
  - 2. Rate for minimum of 40 psig; suitable for sealing around conduits to be installed.
- I. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.
- J. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.

#### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

- B. Install conduit in accordance with NECA 1.
- C. Galvanized Steel Rigid Metal Conduit (RMC): Install in accordance with NECA 101.
- D. Aluminum Rigid Metal Conduit (RMC): Install in accordance with NECA 102.
- E. Rigid Polyvinyl Chloride (PVC) Conduit: Install in accordance with NECA 111.
- F. Conduit Routing:

5.

- 1. Unless dimensioned, conduit routing indicated is diagrammatic.
- 2. When conduit destination is indicated without specific routing, determine exact routing required.
- 3. Conceal conduits unless specifically indicated to be exposed.
- 4. Conduits in the following areas may be exposed, unless otherwise indicated:
  - a. Electrical rooms.
  - b. Mechanical equipment rooms.
  - Unless otherwise approved, do not route exposed conduits:
    - a. Across floors.
    - b. Across roofs.
    - c. Across top of parapet walls.
    - d. Across building exterior surfaces.
- 6. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
- 7. Arrange conduit to maintain adequate headroom, clearances, and access.
- 8. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
- 9. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
- 10. Group parallel conduits in same area on common rack.
- G. Conduit Support:
  - 1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.
  - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
  - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
  - 4. Use conduit strap to support single surface-mounted conduit.
    - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
  - 5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
  - 6. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
  - 7. Use of wire for support of conduits is not permitted.
- H. Connections and Terminations:
  - 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
  - 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
  - 3. Use suitable adapters where required to transition from one type of conduit to another.

- 4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
- 5. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
- 6. Secure joints and connections to provide mechanical strength and electrical continuity.
- I. Penetrations:
  - 1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
  - 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
  - 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
  - 4. Conceal bends for conduit risers emerging above ground.
  - 5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
  - 6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
  - 7. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 07.
- J. Underground Installation:
  - 1. Provide trenching and backfilling in accordance with Division 31.
- K. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide concrete in accordance with Division 03 with minimum concrete cover of 2 inches on all sides unless otherwise indicated.
- L. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
  - 1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
  - 2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
  - 3. Where conduits are subject to earth movement by settlement or frost.
- M. Conduit Sealing:
  - 1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
    - a. Where conduits enter building from outside.
    - b. Where service conduits enter building from underground distribution system.
    - c. Where conduits enter building from underground.
    - d. Where conduits may transport moisture to contact live parts.
  - 2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
    - a. Where conduits pass from outdoors into conditioned interior spaces.
    - b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- N. Provide grounding and bonding; see Section 26 0526.
- O. Identify conduits; see Section 26 0553.

#### 3.03 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

#### END OF SECTION 26 0533.13

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#### SECTION 26 0533.16 BOXES FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

#### 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements.
- B. Division 03 Concrete: Concrete.
- C. Division 07 Thermal and Moisture Protection: Firestopping.
- D. Division 08 Openings: Access Doors.
- E. Section 08 3100 Access Doors and Panels: Panels for maintaining access to concealed boxes.
- F. Section 26 0005 Basic Electrical Requirements.
- G. Section 26 0526 Grounding and Bonding for Electrical Systems.
- H. Section 26 0529 Hangers and Supports for Electrical Systems.
- I. Section 26 0533.13 Conduit for Electrical Systems:
  - 1. Conduit bodies and other fittings.
  - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- J. Section 26 0553 Identification for Electrical Systems: Identification products and requirements.
- K. Section 26 2726 Wiring Devices:
  - 1. Wall plates.
- L. Section 26 2813 Fuses: Spare fuse cabinets.

#### 1.03 REFERENCE STANDARDS

- A. NECA 1 Standard for Good Workmanship in Electrical Construction; 2023.
- B. NECA 130 Standard for Installing and Maintaining Wiring Devices; 2016.
- C. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- D. NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- E. NEMA OS 1 Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).
- F. NFPA 70 National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. SCTE 77 Specifications for Underground Enclosure Integrity; 2017.
- H. UL 50 Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- I. UL 50E Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 508A Industrial Control Panels; Current Edition, Including All Revisions.

K. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
  - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  - 3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
  - 4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
  - 5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
  - 6. Coordinate the work with other trades to preserve insulation integrity.
  - 7. Coordinate the work with other trades to provide walls suitable for installation of flushmounted boxes where indicated.
  - 8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.05 SUBMITTALS

- A. Contractor shall provide submittals for equipment listed herein. Refer to Division 01 for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.
  - 1. Underground Boxes/Enclosures: Include reports for load testing in accordance with SCTE 77 certified by a professional engineer or an independent testing agency upon request.
- C. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 Product Requirements, for additional provisions.
  - 2. Keys for Lockable Enclosures: Two of each different key.

#### PART 2 PRODUCTS

#### 2.01 BOXES

- A. General Requirements:
  - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
  - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
  - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
  - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
  - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
  - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.

- 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
- 3. Use suitable concrete type boxes where flush-mounted in concrete.
- 4. Use suitable masonry type boxes where flush-mounted in masonry walls.
- 5. Use raised covers suitable for the type of wall construction and device configuration where required.
- 6. Use shallow boxes where required by the type of wall construction.
- 7. Do not use "through-wall" boxes designed for access from both sides of wall.
- 8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
- 9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
- 10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
- 11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
- 12. Wall Plates: Comply with Section 26 2726.
- 13. Manufacturers:
  - a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com
  - b. Hubbell Incorporated; Bell Products: www.hubbell-rtb.com
  - c. Hubbell Incorporated; RACO Products: www.hubbell-rtb.com
  - d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com
  - e. Thomas & Betts Corporation: www.tnb.com
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
  - 1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
  - 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
  - 3. Junction and Pull Boxes Larger Than 100 cubic inches:
    - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
    - b. Boxes 6 square feet and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.
  - 4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
    - a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
    - b. Back Panels: Painted steel, removable.
    - c. Terminal Blocks: Provide voltage/current ratings and terminal quantity suitable for purpose indicated, with 25 percent spare terminal capacity.

#### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide separate boxes for emergency power and normal power systems.
- E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- H. Box Locations:
  - 1. Locate boxes to be accessible. Provide access panels in accordance with Division 08 as required where approved by the Architect.
  - 2. Unless dimensioned, box locations indicated are approximate.
  - 3. Locate boxes as required for devices installed under other sections or by others.
  - 4. Locate boxes so that wall plates do not span different building finishes.
  - 5. Locate boxes so that wall plates do not cross masonry joints.
  - 6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
  - 7. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
    - a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
  - 8. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 0533.13.
- I. Box Supports:
  - 1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
  - 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
- J. Install boxes plumb and level.
- K. Flush-Mounted Boxes:
  - 1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
  - 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
  - 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- L. Install boxes as required to preserve insulation integrity.
- M. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- O. Close unused box openings.

- P. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- Q. Provide grounding and bonding in accordance with Section 26 0526.

#### 3.03 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

#### END OF SECTION 26 0533.16

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#### SECTION 26 0553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Voltage markers.

#### 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements.
- B. Division 09 Finishes: Interior and Exterior Painting.
- C. Section 26 0005 Basic Electrical Requirements
- D. Section 26 0519 Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- E. Section 26 0536 Cable Trays for Electrical Systems: Additional identification requirements for cable tray systems.
- F. Section 26 0573 Power System Studies: Arc flash hazard warning labels.
- G. Section 26 2726 Wiring Devices: Device and wallplate finishes; factory pre-marked wallplates.

#### 1.03 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

#### PART 2 PRODUCTS

#### 2.01 IDENTIFICATION REQUIREMENTS

- A. Existing Work: Unless specifically excluded, identify existing elements to remain that are not already identified in accordance with specified requirements.
- B. Identification for Equipment:
  - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
    - a. Panelboards:
      - 1) Identify ampere rating.
      - 2) Identify voltage and phase.
      - 3) Identify power source and circuit number. Include location when not within sight of equipment.
      - 4) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
      - 5) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
  - 2. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
- C. Identification for Raceways:
  - 1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet.
  - 2. Use voltage markers, color-coded bands, or factory-painted conduits to identify systems other than normal power system for accessible conduits.
    - a. Maximum Intervals: 20 feet.

- b. Color-Coded Bands: Use field-painting or vinyl color coding electrical tape to mark bands 3 inches wide.
  - 1) Field-Painting: Comply with Section 09 9123 and 09 9113.
  - 2) Vinyl Color Coding Electrical Tape: Comply with Section 26 0519.
- c. Color Code:
- 3. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify spare conduits at each end. Identify purpose and termination location.
- 4. Use underground warning tape to identify underground raceways.
- 5. Use voltage markers to identify highest voltage present for wireways at maximum intervals of 20 feet.
- D. Identification for Cable Tray: Comply with Section 26 0536.
- E. Identification for Boxes:
  - 1. Use voltage markers to identify highest voltage present.
  - 2. Use voltage markers or color coded boxes to identify systems other than normal power system.
    - a. Color-Coded Boxes: Field-painted in accordance with Division 09 per the same color code used for raceways.
- F. Identification for Devices:
  - 1. Wiring Device and Wallplate Finishes: Comply with Section 26 2726.
  - 2. Use identification label to identify fire alarm system devices.
    - a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.
  - 3. Use identification label to identify serving branch circuit for all receptacles.
    - a. For receptacles in public areas or in areas as directed by Architect, provide identification on inside surface of wallplate.
- G. Identification for Luminaires:
  - 1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

#### PART 3 EXECUTION

#### 3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

#### 3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
  - 1. Surface-Mounted Equipment: Enclosure front.
  - 2. Flush-Mounted Equipment: Inside of equipment door.
  - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
  - 4. Elevated Equipment: Legible from the floor or working platform.
  - 5. Branch Devices: Adjacent to device.
  - 6. Interior Components: Legible from the point of access.
  - 7. Conduits: Legible from the floor.
  - 8. Boxes: Outside face of cover.
  - 9. Conductors and Cables: Legible from the point of access.
  - 10. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.

- D. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- E. Mark all handwritten text, where permitted, to be neat and legible.

END OF SECTION 26 0553

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#### SECTION 26 2726 WIRING DEVICES

#### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Wall plates and covers.

#### 1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Project administrative and procedural requirements.
- B. Division 02 Existing Conditions: Demolition, cleaning and disposal requirements, cutting and patching requirements, and repairs.
- C. Section 26 0005 Basic Electrical Requirements.
- D. Section 26 0519 Low-Voltage Electrical Power Conductors and Cables: Manufactured wiring systems for use with access floor boxes with compatible pre-wired connectors.
- E. Section 26 0526 Grounding and Bonding for Electrical Systems.
- F. Section 26 0533.16 Boxes for Electrical Systems.
- G. Section 26 0533.23 Surface Raceways for Electrical Systems: Surface raceway systems, including multioutlet assemblies.
- H. Section 26 0553 Identification for Electrical Systems: Identification products and requirements.
- I. Section 26 0583 Wiring Connections: Cords and plugs for equipment.
- J. Section 26 0923 Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors, in-wall time switches, and in-wall interval timers.

#### 1.03 REFERENCE STANDARDS

- A. FS W-C-596 Connector, Electrical, Power, General Specification for; 2014h (Validated 2022).
- B. NECA 1 Standard for Good Workmanship in Electrical Construction; 2023.
- C. NECA 130 Standard for Installing and Maintaining Wiring Devices; 2016.
- D. NEMA WD 1 General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).
- E. NEMA WD 6 Wiring Devices Dimensional Specifications; 2021.
- F. NFPA 70 National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 498 Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
- H. UL 514D Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
  - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
  - 3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.

- 4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
- 5. Coordinate the core drilling of holes for poke-through assemblies with the work covered under other sections.
- 6. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.
- B. Sequencing:
  - 1. Do not install wiring devices until final surface finishes and painting are complete.

#### 1.05 SUBMITTALS

A. Contractor shall provide submittals for equipment listed herein. Refer to Division 01 for submittal procedures.

#### PART 2 PRODUCTS

#### 2.01 WIRING DEVICE APPLICATIONS

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.
- D. Provide tamper resistant receptacles for receptacles installed in areas listed below:
  - 1. All 15 and 20-ampere 125 and 250-volt nonlocking type receptacles in the areas listed below shall be listed tamper-resistant receptacles, unless otherwise excluded in NEC.
    - a. Dwelling units in all areas specified in NEC 210.52 and 550.13.
    - b. All areas listed in NEC 406.12.
    - c. Child care facilities, pre-schools and educational facilities.

#### 2.02 WIRING DEVICE FINISHES

- A. Provide wiring device finishes as described below unless otherwise indicated.
- B. Wiring Devices, Unless Otherwise Indicated: White with gray stainless steel wall plate.
- C. Wiring Devices Connected to Emergency Power: Red with stainless steel wall plate factory engraved "Emergency".

#### 2.03 RECEPTACLES

- A. Manufacturers:
  - 1. Hubbell Incorporated: www.hubbell.com
  - 2. Leviton Manufacturing Company, Inc: www.leviton.com
  - 3. Lutron Electronics Company, Inc; Designer Style: www.lutron.com
  - 4. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us
- B. Receptacles General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
  - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
  - 2. NEMA configurations specified are according to NEMA WD 6.
- C. Convenience Receptacles:
  - 1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.

- Tamper Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type; single or duplex as indicated on the drawings.
- 3. Tamper Resistant and Weather Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.

#### 2.04 WALL PLATES AND COVERS

- A. Manufacturers:
  - 1. Hubbell Incorporated: www.hubbell-wiring.com
  - 2. Leviton Manufacturing Company, Inc: www.leviton.com
  - 3. Lutron Electronics Company, Inc: www.lutron.com
  - 4. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us
  - 5. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
- B. Wall Plates: Comply with UL 514D.
  - 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
  - 2. Size: Standard.
  - 3. Screws: Metal with slotted heads finished to match wall plate finish.
- C. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.
- D. Weatherproof Receptacle Covers for Damp Locations: Gasketed, cast aluminum, with selfclosing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.

#### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

#### 3.03 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of wiring devices provided under this section.
  - 1. Mounting Heights: Unless otherwise indicated, as follows:
    - a. Wall Switches: 48 inches above finished floor.

- b. Receptacles: 18 inches above finished floor or 6 inches above counter.
- 2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
- 3. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.
- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- I. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- J. Install wall switches with OFF position down.
- K. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- L. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- M. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- N. Identify wiring devices in accordance with Section 26 0553.

#### 3.04 FIELD QUALITY CONTROL

- A. Inspect each wiring device for damage and defects.
- B. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.
- C. Test each receptacle to verify operation and proper polarity.
- D. Correct wiring deficiencies and replace damaged or defective wiring devices.

#### END OF SECTION 26 2726

#### SECTION 26 2816.13 ENCLOSED CIRCUIT BREAKERS

#### PART 2 PRODUCTS

#### 1.01 ENCLOSED CIRCUIT BREAKERS

- A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
  - 1. Altitude: Less than 6,600 feet.
  - 2. Ambient Temperature: Between 23 degrees F and 104 degrees F.
- D. Short Circuit Current Rating:
- E. Conductor Terminations: Suitable for use with the conductors to be installed.
- F. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
- G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
  1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- H. Provide externally operable handle with means for locking in the OFF position.

#### 1.02 MOLDED CASE CIRCUIT BREAKERS

- A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
- B. Interrupting Capacity:
  - 1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
  - 2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- C. Conductor Terminations:
  - 1. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- D. Provide the following circuit breaker types where indicated:
  - 1. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
  - 2. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.

#### END OF SECTION 26 2816.13

# ANCHOR BAY SCHOOL DISTRICT

# EARLY CHILDHOOD CENTER PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 08, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURAL		MECHANICAL		EL	
A0.01 A0.02 A2 10	ARCHITECTURAL REFERENCE SHEET CODE PLAN ELOOR PLAN	M0.00 M1.10	MECHANICAL GENERAL INFORMATION MECHANICAL PLAN	E0.0 E1.1	





LECTRICAL

ELECTRICAL GENERAL INFORMATION ELECTRICAL PLAN



# FRENCH

52680, WASHINGTON ST, NEW BALTIMORE, MICHIGAN 84047 -





©FRENCH ASSOCIATES, INC.

# MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contras	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

# ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT

WITH WITHOUT WATER CLOSET WOOD WDSC WATER HEATER

WC WD

WH WP

WWF



DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEET WHERE DETAIL IS

DRAWN

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL

METAL WALL PANEL MASONRY OPENING METAL STUD FRAMING

METAL THRESHOLD NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WOOD SOUND CONTROL WORKING POINT / WATERPROOF WELDED WIRE FABRIC



















TACK BOARDS AND MARKER BOARDS

KEY PLAN





### **BUILDING INFORMATION**

- 1. EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 199. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA 11,406 SQ FT

## CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

## CODE PLAN INFORMATION

- GREAT OAKS ELEMENTARY ) DESIGN CODES
- 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)

NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6) A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

ISSUE DATE	ISSUED FOR
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## PROJECT

Anchor Bay Schools Early Childhood Center Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET CODE PLAN

PROJECT NUMBER	ing Upgrades
2025-019	/ Childhood Center School Plumb
sheet number A0.02	2025-019 Anchor Bay Early

KEY PLAN





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APPROVED	DCJ



## PROJECT

Anchor Bay Schools Early Childhood Center Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET COMPOSITE FLOOR PLAN





PROPOSED



MECI	HANICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL LINIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
САР	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
СО	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB IEMPERATURE
DEG	
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
	FULL LOAD AMPS
	FLOUR
FFD	FLINNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HUSE BIBB
HU Lup	
l <sup>10<sup>-</sup></sup>	

MECHANICAL ABBREVIATIONS			
ABBREV.	DESCRIPTION		
HR	HOUR		
HTG	HEATING		
HYD	HYDRANT		
HZ	HERTZ		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IN	INCHES		
INST	INSTALLED		
INV	INVERT		
ISP	INTERNAL STATIC PRESSURE		
IW	INDIRECT WASTE		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
LAV	LAVATORY		
LBS/HR	POUNDS PER HOUR		
LDB	LEAVING DRY BULB TEMPERATURE		
LRA	LOCKED ROTOR AMPS		
LWB	LEAVING WET BULB TEMPERATURE		
MAV	MANUAL AIR VENT		
MAX	MAXIMUM		
МВН	1000 BRITISH THERMAL UNITS PER HOUR		
MCA	MINIMUM CIRCUIT AMPACITY		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MH	MANHOLE		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)		
MOP	MAXIMUM OVER-CURRENT PROTECTION		
N.C.	NOISE CRITERIA		
NIC	NOT IN CONTRACT		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NOM			
	OUTSIDE AIR		
OBD	OPPOSED BLADE DAMPER		
	OUTSIDE DIAMETER		
	OVERELOW ROOF SUMP		
0587	OUTSIDE SCREW AND YOKE		
PD	PRESSURE DROP (FEFT OF WATER)		
PRV	PRESSURE REDUCING VALVE		
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
PSIG	POUNDS PER SQUARE INCH – GAUGF		
PT	PRESSURE / TEMPERATURE PORT		
RA	RETURN AIR		
RH	RELATIVE HUMIDITY		
REQD	REQUIRED		
REL.A	RELIEF AIR		
RPM	REVOLUTIONS PER MINUTE		
RPZ	REDUCED PRESSURE ZONE		
RS	ROOF SUMP		
SA	SUPPLY AIR		
SH	SHOWER		
SP	STATIC PRESSURE		
SqFt / SF	SQUARE FOOT/SQUARE FEET		
SS	SERVICE SINK		
TC	TEMPERATURE CONTROL		
Т&Р	TEMPERATURE AND PRESSURE		
TSP	TOTAL STATIC PRESSURE		
TYP	TYPICAL		
UG	UNDERGROUND		
UH	UNIT HEATER		
UL	UNDERWRITERS LABORATORY		
UNO	UNLESS NOTED OTHERWISE		

Μ ABBF W& W WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_[ \_\_\_\_E \_\_\_\_X $\rightarrow$ \_\_\_> --\_\_\_\_¤ \_\_\_\_/*/* (0 0 \_\_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
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REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS			
ABBREV.	DESCRIPTION		
o	PIPE ELBOW UP		
	PIPE ELBOW DOWN		
<del></del>	PIPE TEE DOWN		
	DIRECTION OF FLOW		
	UNION		
	STRAINER		
	CONCENTRIC REDUCER		
	ECCENTRIC REDUCER		
	EXPANSION JOINT		
	FLEXIBLE CONNECTION		
	PIPE ANCHOR		
	PIPE GUIDE		
, M			
	GLUBE VALVE		
	BALL VALVE		
	BUTTERFLY VALVE		
<u>→</u>	BACKWATER VALVE		
<u>k</u>	ANGLE VALVE		
	CHECK VALVE (SWING)		
	CHECK VALVE (SPRING)		
I∕⊽I	PLUG VALVE		
	NEEDLE VALVE		
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)		
↓	PRESSURE REGULATING VALVE		
X	SOLENOID VALVE		
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)		
$\bigcirc$	CENTRIFUGAL FAN		
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE		
	TRAP (PLAN VIEW)		
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)		
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)		
Ô	ROOF SUMP		
——⊖ C0	CLEAN OUT (IN FLOOR)		
//co	CLEAN OUT (IN LINE)		
	CLEAN OUT (WALL)		
BFP	BACKFLOW PREVENTER		
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY		
+	HOSE BIBB, WALL HYDRANT		
	DIRECTION OF PIPE PITCH		
$\odot$	SPRINKLER HEAD (UPRIGHT)		
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)		
—FS	FLOW SWITCH		
<u> </u>	SIAMESE CONNECTION (YARD)		
, ,	SIAMESE CONNECTION (WALL MOUNTED)		
× H	FIRE HYDRANT		
	FLOW MEASURING DEVICE		
<u>≫</u> ⊼	BALANCING VAI VF		
	COMBINATION FLOW MEASURING AND RALANCING DEVICE		
<u>- ド</u> 「天 MAV			
¥			

MECHANICAL SYMBOLS				
ABBREV.	DESCRIPTION			
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)			
	RECTANGULAR TAKE-OFF (DOUBLE LINE)			
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)			
	ROUND TAKE-OFF (DOUBLE LINE)			
	SPIN-IN FITTING (WITH VOLUME DAMPER)			
	ELBOW (WITH TURNING VANES)			
	RADIUS RECTANGULAR ELBOW			
	RADIUS ROUND ELBOW			
	RECTANGULAR ELBOW UP			
	ROUND ELBOW UP			
	RECTANGULAR ELBOW DOWN			
	ROUND ELBOW DOWN			
	CONCENTRIC TRANSITION (DOUBLE LINE)			
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)			
	ECCENTRIC TRANSITION (DOUBLE LINE)			
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)			
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)			
ς <u>ι</u> _Γ_ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)			
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)			
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)			
	FLEXIBLE CONNECTION			
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER			
,−⊋	SUPPLY DIFFUSER			
	LINEAR SLOT DIFFUSER			
$\leftarrow$	RETURN OR EXHAUST GRILLE			
<b></b>	TRANSFER GRILLE			
	CROSS SECTION OF SUPPLY AIR DUCT			
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT			
	EXISTING FIRE DAMPER (HORIZONTAL)			
	EXISTING			
	FIRE DAMPER (VERTICAL) NEW			
<u> </u>	EXISTING SMOKE DAMPER			
	NEW			
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)			
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER			
	NEW (HORIZONTAL)			
	VOLUME DAMPER (MANUALLY ADJUSTABLE)			
M	MOTORIZED DAMPER			
SD T	SMOKE DETECTOR			
<u>(C02</u> )	CO2 SENSOR			
(T)	THERMOSTAT OR TEMPERATURE SENSOR			
H	HUMIDISTAT OR HUMIDITY SENSOR			
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW			

PIPING LEGEND						
ABBREV.	BREV. DESCRIPTION					
CA	COMPRESSED AIR PIPING					
CD	CONDENSATE DRAIN PIPING					
DT	DRAIN TILE					
——F	FIRE PROTECTION PIPING					
FOR	FUEL OIL RETURN PIPING					
F0S	FUEL OIL SUPPLY PIPING					
G	NATURAL GAS PIPING					
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING					
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING					
CW	DOMESTIC COLD WATER PIPING					
——NPCW——	NON POTABLE COLD WATER PIPING					
TW	TEMPERED WATER PIPING					
——HW——	DOMESTIC HOT WATER PIPING					
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE					
HWR	DOMESTIC HOT WATER RETURN PIPING					
SAN	SANITARY WASTE PIPING					
PSAN	PUMPED SANITARY PIPING					
V	VENT PIPING					
ST	STORM SEWER PIPING					
PST	PUMPED STORM PIPING					
RC	RAIN CONDUCTOR PIPING					
ORC	OVERFLOW RAIN CONDUCTOR PIPING					
CHWR	CHILLED WATER RETURN PIPING					
CHWS	CHILLED WATER SUPPLY PIPING					
CWR	CONDENSER WATER RETURN PIPING					
CWS	CONDENSER WATER SUPPLY PIPING					
HHWR	HEATING HOT WATER RETURN MMMIL					
HHWS	HEATING HUT WATER SUPPLY PIPING					
	HEAT PUMP LOOP RETURN PIPING					
	HEAT PUMP LOOP SUPPLY PIPING					
	REFRIGERANT LIQUID PIPING					
—-кs——	REFRIGERANT SUCTION PIPING					
	CEO HEAT EVOLUTION					
	GEO HEAT EXCHANGE RETURN					
NTS	GEO HEAT EXCHANGE SUPPLY					
HPS						
	I OW DRESSURE STEAM DIDING					
CR	STEAM CONDENSATE RETURN DIDING					
	PUMPED STEAM CONDENSATE RETURN DIDING					
I PC	LOW PRESSURE CONDENSATE PIPING					
HPC						
MA	MEDICAL AIR PIPING					
N	NITROGEN GAS PIPING					
02	OXYGEN GAS PIPING					
	VACUUM PIPING					

APPLICABLE CODES AND REGULATIONS				
YEAR	CODE			
2021	MICHIGAN BUILDING CODE			
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS			
2021	MICHIGAN PLUMBING CODE			
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES			
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)			

DRAWING INDEX									
SHT NO		DESCRIPTION							
M0.00	MECH	IECHANICAL GENERAL INFORMATION							
M1.10	MECH	ANICAL PLAN							
	[	DRAWING NOTATION							
SYMBOL DESCRIPTION									
(1	$\rangle$	NEW WORK KEY NOTE NO. 1							
$\int_{1}$	7	DEMOLITION KEY NOTE NO. 1							
<u>EF–</u>	<u>·1</u>	EQUIPMENT TAG							
S-1 10x1 100-	0 •2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10 \times 10$ CFM = $100$ (TYPICAL FOR 2) $S = SUPPLY$ $R = RETURNE = EXHAUSTT = TRANSFER$							
EXISTING DEVICES OR EQUIPMENT									
NEW OR MODIFIED DEVICES OR EQUIPMENT									
+ / / / S EXISTING SYSTEM COMPONENT TO BE REMOVED									
POINT OF NEW CONNECTION									
SHEET M5.2 ON WHICH SECTION DRAWN									
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)									
SYSTEM RISER DESIGNATION X-# RISER NUMBER SYSTEM RISER D: DOMESTIC WATER H: HVAC PIPING SP: STAIRWELL PRESSURIZATION V: VENT F: EXHAUST									

ISSUE DATE		
05/08/2025	BIDS	
DRAWN	RFB	
CHECKED	DGN	

KEY PLAN



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# Anchor Bay Schools Early Childhood Center Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET MECHANICAL GENERAL INFORMATION

# PROJECT NUMBER



SHEET NUMBER

M0.00



# PLUMBING FIXTURES/SPECIALTIES SCHEDULE

ITEM	PIPE (		CTION SIZ	ZES	MANUFACTURER &		
ΠĽΜ	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES	
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION	



EEL HINGED
FILTERED).

# MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

## PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

 $\langle \# \rangle$ 

# **KEYED NOTES**

 REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL - COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN





# FRENCH

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# Anchor Bay Schools Early Childhood Center Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET MECHANICAL PLAN











	COPPER FEEDER SCHEDULE							
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



## TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

POWER SYMBOL LIST					
SYMBOL	DESCRIPTION				
•	CONDUIT DOWN				
0	CONDUIT UP				
4	DISCONNECT SWITCH - NON FUSED				
L	DISCONNECT SWITCH - FUSED				
4	DISCONNECT SWITCH - COMB. MOTOR STARTER				
	ELECTRICAL PANEL				
$\bullet$	GROUNDING ROD				
Ē	GROUND				
<del></del>	GROUNDING BAR				
J	JUNCTION BOX				
Μ	METER				
$\mathcal{N}$	MOTOR – SINGLE PHASE				
$\mathbf{VO}$	MOTOR – THREE PHASE				
\$м	MOTOR RATED SWITCH				
φ	POWER RECEPTACLE – SIMPLEX TYPE				
φ	POWER RECEPTACLE – DUPLEX TYPE				
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER				
Фusb	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE				
+	POWER RECEPTACLE – QUADRUPLEX TYPE				
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE				
PT	POWER RECEPTACLE – POKE THRU TYPE				
$\odot$	POWER RECEPTACLE – SPECIALTY TYPE				
TC	TIME CLOCK				
Т	TRANSFORMER				
ALL DEVIC	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS				

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST						
SYMBOL	DESCRIPTION					
FA	AUDIBLE DEVICE/WALL MOUNTED					
F	VISUAL DEVICE/WALL MOUNTED					
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED					
F	AUDIBLE DEVICE/CEILING MOUNTED					
Ē	VISUAL DEVICE/CEILING MOUNTED					
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED					
¢\$	CO ALARM/SMOKE DETECTOR					
Ś	SMOKE DETECTOR					
Ô	CO ALARM					
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR					
H	HEAT DETECTOR					
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET					
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)					
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)					
F	MANUAL PULL STATION					
FS	FLOW SWITCH					
TS	TAMPER SWITCH					
FAA	FIRE ALARM ANNUNCIATOR PANEL					
FACP	FIRE ALARM CONTROL PANEL					
1/0	INPUT/OUTPUT CONTROL MODULE					
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND					

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELECTRICAL ABBREVIATIONS								
ABBREV.	DESCRIPTION							
AFF	ABOVE FINISHED FLOOR							
A	AMPERE							
AF	AMPERE FUSE/AMPERE FRAME							
AWG	AMERICAN WIRE GAUGE							
AT	AMPERE TRIP							
ATS	AUTOMATIC TRANSFER SWITCH							
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)							
С	CONDUIT OR CEILING MOUNTED							
СВ	CIRCUIT BREAKER							
CL	CONTROL LOAD							
CU	COPPER							
CT	CURRENT TRANSFORMER							
DIA								
DISC								
EWC								
FPO	EMERGENCY POWER OFF							
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK							
FA	FIRE ALARM							
FACP	FIRE ALARM CONTROL PANEL							
FLA	FULL LOAD AMPS							
F	FUSE							
G/GRD	GROUND							
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER							
HOA	HAND-OFF-AUTO							
HP	HORSEPOWER							
IG	ISOLATED GROUND							
KV	KILOVOLT							
KVA	KILOVOLT AMPERE							
KW	KILOWATT HOUR							
KWH								
	MAIN CIRCUIT BREAKER							
MDP	MAIN DISTRIBUTION PANEL							
MLO	MAIN LUG ONLY							
MAX	MAXIMUM							
MIN	MINIMUM							
NEC	NATIONAL ELECTRICAL CODE							
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.							
N/NEU	NEUTRAL							
NF	NON-FUSIBLE							
NC	NORMALLY CLOSED							
NO	NORMALLY OPEN							
NIC	NOT IN CONTRACT							
PH. OR Ø	PHASE							
r pf								
PVC.	POLYVINYL CHLORIDE (PLASTIC)							
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT							
(RR)	REMOVE AND REINSTALL							
RMC	RIGID METALLIC CONDUIT							
RP	RECEPTACLE PANEL							
TBB	TELEPHONE BACKBOARD							
TYP.	TYPICAL							
UC	UNDER COUNTER							
UL	UNDERWRITERS LABORATORIES							
UPS	UNINTERRUPTIBLE POWER SUPPLY							
USB	UNIVERSAL SERIAL BUS							
V	VOLT							
VA 	VOLT AMPERE							
W	WATT							
WG								
	TRANSFORMER							
∧r wr⊄								

# DRAWING INDEX

DESCRIPTION

SHT NO

0.00 El	LECTRICAL	GENERAL	INFORMATION
1.10 El	LECTRICAL	PLAN	

SYMBOL	DESCRIPTION		
L1	LIGHTING FIXTURE TAG		
	CONSTRUCTION KEY NOTE NUMBER 1		
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1		
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)		
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)		
QUIPMENT	EQUIPMENT TAG		
	EXISTING DEVICES OR EQUIPMENT		
	NEW OR MODIFIED DEVICES OR EQUIPMENT		
	NEW OR MODIFIED UNDERGROUND WIRING		
<del>////////</del>	EXISTING SYSTEM COMPONENT TO BE REMOVED		
Ð	POINT OF NEW CONNECTION		
	-SECTION NUMBER 4		

E5.2		
SHEET E5.2 ON WHICH SECTION IS DRAWN		
SECTION NO. 6		
<u>SECTION</u>		
E5.2 SCALE: $1/4^{"} = 1' - 0"$		
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)		
LIGHTING CONTROL TAG		
LIGHTING CONTROL SPACE TYPE '1' 71 SPACE TYPE '1' 71 SPACE TYPE TYPE TYPE TYPE '1' 71 SPACE TYPE TYPE TYPE TYPE TYPE TYPE TYPE TYP		
ZONE '1' (MAY NOT APPEAR ON EVERY TAG)		
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.		

APPLICABLE CODES AND REGULATIONS				
YEAR	CODE			
2021	MICHIGAN BUILDING CODE			
2015	MICHIGAN ENERGY CODE			
2015	MICHIGAN RESIDENTIAL CODE			
2015	MICHIGAN REHABILITATION CODE			
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8			
2023	NATIONAL ELECTRICAL CODE (NFPA 70)			
2013	NFPA 20			
2013	NFPA 72			
2013	NFPA 101			
2013	NFPA 110			
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES			
985	DETROIT ELEVATOR CODE			

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CHECKED	RWC
APPROVED	SET



FRENCH 2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. SES Project #23 0019 01

# Anchor Bay Schools Early Childhood Center Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



E0.00



KEY PLAN





# ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

# DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

# NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND
- WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

# Image: Mew work keyed notes

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

### KEY PLAN





# FRENCH

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# Anchor Bay Schools Early Childhood Center Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET ELECTRICAL PLAN

### PROJECT NUMBER








# ANCHOR BAY SCHOOL DISTRICT

# ASHLEY ELEMENTARY PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 5, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURAL	

A0.01 ARCHITECTURAL REFERENCE SHEET A0.02 CODE PLAN

A2.10 COMPOSITE FLOOR PLAN

MECHANICAL M0.00 MECHANICAL GENERAL INFORMATION M1.00 MECHANICAL PLAN



ELECTRICAL

E0.00 ELECTRICAL GENERAL INFORMATION E1.10 ELECTRICAL PLAN



# FRENCH

52347 ASHLEY, NEW BALTIMORE MICHIGAN, 48047 -





## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT



DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC









![](_page_253_Figure_36.jpeg)

![](_page_253_Figure_37.jpeg)

![](_page_253_Figure_39.jpeg)

![](_page_253_Figure_41.jpeg)

![](_page_253_Figure_43.jpeg)

TACK BOARDS AND MARKER BOARDS

![](_page_254_Figure_0.jpeg)

![](_page_254_Figure_1.jpeg)

![](_page_254_Picture_3.jpeg)

#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 441. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 59,149 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

- GREAT OAKS ELEMENTARY ) DESIGN CODES
- 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)
- NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
- 2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
  A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_254_Picture_20.jpeg)

#### PROJECT

Anchor Bay Schools Ashley Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET CODE PLAN

## PROJECT NUMBER

![](_page_254_Picture_26.jpeg)

![](_page_254_Picture_27.jpeg)

![](_page_255_Figure_0.jpeg)

![](_page_255_Picture_1.jpeg)

FLOOR PLAN SCALE: NTS

![](_page_255_Figure_3.jpeg)

![](_page_255_Picture_4.jpeg)

![](_page_255_Picture_5.jpeg)

![](_page_255_Picture_6.jpeg)

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DRAWN	- КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_255_Picture_9.jpeg)

#### PROJECT

Anchor Bay Schools Ashley Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET FLOOR PLAN

![](_page_255_Figure_14.jpeg)

PROPOSED

![](_page_255_Picture_16.jpeg)

![](_page_255_Picture_18.jpeg)

A2.10 ELEVATION B SCALE: 1/4" = 1'-0"

![](_page_255_Figure_20.jpeg)

PROPOSED

![](_page_255_Picture_22.jpeg)

PROJECT NUMBER

![](_page_255_Picture_25.jpeg)

MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE	
AD	ACCESS DOOR	
AE	AIR EXTRACTOR	
AFF	ABOVE FINISHED FLOOR	
APD	AIR PRESSURE DROP	
ASR	AUTOMATIC SPRINKLER RISER	
BFP	BACKFLOW PREVENTER	
BHP	BRAKE HORSEPOWER	
BTU	BRITISH THERMAL LINIT	
BTUH	BRITISH THERMAL UNITS PER HOUR	
BWV	BACKWATER VALVE	
САР	CAPACITY	
CAV	CONSTANT AIR VOLUME	
CFH	CUBIC FEET PER HOUR	
CFM	CUBIC FEET PER MINUTE	
CIRC	CIRCULATING	
CLG	COOLING	
СО	CLEAN OUT	
CONT	CONTINUATION OR CONTINUED	
CONV	CONVECTOR	
CUH	CABINET UNIT HEATER	
CV	CONTROL VALVE	
DB	DRY BULB IEMPERATURE	
DEG		
DTC	DRAIN TILE CONNECTION	
DWH	DOMESTIC WATER HEATER	
(E)	EXISTING	
EA/EXH	EXHAUST AIR	
EAT	ENTERING AIR TEMPERATURE	
EDB	ENTERING DRY BULB TEMPERATURE	
EF	EXHAUST FAN	
EJ	EXPANSION JOINT	
EL	ELEVATION	
ELECT	ELECTRICAL	
EMS	ENERGY MANAGEMENT SYSTEM	
ESP		
EWC	ELECTRIC WATER COOLER	
°F	DEGREES FAHRENHEIT	
FA	FACE AREA (COIL) / FREE AREA (LOUVER)	
FC	FLEXIBLE CONNECTION	
FD	FLOOR DRAIN	
FDC	FIRE DEPARTMENT CONNECTION	
FH	FIRE HYDRANT	
FHC	FIRE HOSE CABINET	
FHR	FIRE HOSE RACK	
FHV	FIRE HOSE VALVE	
	FULL LOAD AMPS	
	FLOUR	
FFD	FLINNEL FLOOR DRAIN	
FFE	FINISHED FLOOR ELEVATION	
FS	FLOOR SINK	
FT	FEET	
FURN	FURNISHED	
FV	FACE VELOCITY	
FVC	FIRE VALVE CABINET	
GAL	GALLON	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
HB	HUSE BIBB	
HU LLD		
l <sup>10<sup>-</sup></sup>		

MECI	MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION		
HR	HOUR		
HTG	HEATING		
HYD	HYDRANT		
HZ	HERTZ		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IN	INCHES		
INST	INSTALLED		
INV	INVERT		
ISP	INTERNAL STATIC PRESSURE		
IW	INDIRECT WASTE		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
LAV	LAVATORY		
LBS/HR	POUNDS PER HOUR		
LDB	LEAVING DRY BULB TEMPERATURE		
LRA	LOCKED ROTOR AMPS		
LWB	LEAVING WET BULB TEMPERATURE		
MAV	MANUAL AIR VENT		
MAX	MAXIMUM		
МВН	1000 BRITISH THERMAL UNITS PER HOUR		
MCA	MINIMUM CIRCUIT AMPACITY		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MH	MANHOLE		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)		
MOP	MAXIMUM OVER-CURRENT PROTECTION		
N.C.	NOISE CRITERIA		
NIC	NOT IN CONTRACT		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NOM			
	OUTSIDE AIR		
OBD	OPPOSED BLADE DAMPER		
	OUTSIDE DIAMETER		
	OVERELOW ROOF SUMP		
0587	OUTSIDE SCREW AND YOKE		
PD	PRESSURE DROP (FEFT OF WATER)		
PRV	PRESSURE REDUCING VALVE		
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
PSIG	POUNDS PER SQUARE INCH – GAUGF		
PT	PRESSURE / TEMPERATURE PORT		
RA	RETURN AIR		
RH	RELATIVE HUMIDITY		
REQD	REQUIRED		
REL.A	RELIEF AIR		
RPM	REVOLUTIONS PER MINUTE		
RPZ	REDUCED PRESSURE ZONE		
RS	ROOF SUMP		
SA	SUPPLY AIR		
SH	SHOWER		
SP	STATIC PRESSURE		
SqFt / SF	SQUARE FOOT/SQUARE FEET		
SS	SERVICE SINK		
TC	TEMPERATURE CONTROL		
Т&Р	TEMPERATURE AND PRESSURE		
TSP	TOTAL STATIC PRESSURE		
TYP	TYPICAL		
UG	UNDERGROUND		
UH	UNIT HEATER		
UL	UNDERWRITERS LABORATORY		
UNO	UNLESS NOTED OTHERWISE		

Μ ABBF V W& WE WC WG WH

# ABB \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_ \_\_\_\_\_/*,* \_\_\_\_ر ص 6 \_\_\_\_ н

IECHANICAL	ABBREVIATIONS
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REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS		
ABBREV.	DESCRIPTION	
0	PIPE ELBOW UP	
	PIPE ELBOW DOWN	
	PIPE TEE DOWN	
•	DIRECTION OF FLOW	
	UNION	
	STRAINER	
	CONCENTRIC REDUCER	
	ECCENTRIC REDUCER	
	EXPANSION JOINT	
	FLEXIBLE CONNECTION	
	PIPE ANCHOR	
	PIPE GUIDE	
	PIPE CAP OR PLUG	
- 		
	GLOBE VALVE	
	BALL VALVE	
	BACKWATER VALVE	
	CHECK VALVE (SPRING)	
N/1		
 太	OUTSIDE SOREW AND YOKE VALVE (OS&Y)	
	PRESSURE RECHLATING VALVE	
X 		
	CONTROL VALVE (2-WAY / 3-WAY)	
	CENTRIFLICAL FAN	
) F	ALITOMATIC GAS SHUT-OFF VALVE	
©	TRAP (PLAN VIEW)	
	FLOOR DRAIN / FLINNEL FLOOR DRAIN (PLAN VIEW)	
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (FLEVATION)	
	ROOF SUMP	
	CLEAN OUT (IN FLOOR)	
<u>ک//co</u>	CLEAN OUT (IN LINE)	
	CLEAN OUT (WALL)	
BFP	BACKFLOW PREVENTER	
	WATER METER ASSEMBLY	
+	HOSE BIBB, WALL HYDRANT	
	DIRECTION OF PIPE PITCH	
0	SPRINKLER HEAD (UPRIGHT)	
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)	
—FS	FLOW SWITCH	
 کر	SIAMESE CONNECTION (YARD)	
	SIAMESE CONNECTION (WALL MOUNTED)	
н Сн	FIRE HYDRANT	
	FLOW MEASURING DEVICE	
Ž	BALANCING VALVE	
Ā	COMBINATION FLOW MEASURING AND BALANCING DEVICE	
	AUTOMATIC AIR VALVE	
, ⊢∰MAA	MANUAL AIR VALVE	

MECHANICAL SYMBOLS		
ABBREV.	DESCRIPTION	
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)	
	RECTANGULAR TAKE-OFF (DOUBLE LINE)	
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)	
	ROUND TAKE-OFF (DOUBLE LINE)	
	SPIN-IN FITTING (WITH VOLUME DAMPER)	
	ELBOW (WITH TURNING VANES)	
	RADIUS RECTANGULAR ELBOW	
	RADIUS ROUND ELBOW	
	RECTANGULAR ELBOW UP	
	ROUND ELBOW UP	
	RECTANGULAR ELBOW DOWN	
	ROUND ELBOW DOWN	
	CONCENTRIC TRANSITION (DOUBLE LINE)	
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)	
	ECCENTRIC TRANSITION (DOUBLE LINE)	
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)	
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER	
,−⊋	SUPPLY DIFFUSER	
	LINEAR SLOT DIFFUSER	
$\leftarrow$	RETURN OR EXHAUST GRILLE	
<b></b>	TRANSFER GRILLE	
	CROSS SECTION OF SUPPLY AIR DUCT	
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT	
	EXISTING FIRE DAMPER (HORIZONTAL)	
	EXISTING	
	FIRE DAMPER (VERTICAL) NEW	
<u> </u>	EXISTING SMOKE DAMPER	
	NEW	
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER	
	NEW (HORIZONTAL)	
	VOLUME DAMPER (MANUALLY ADJUSTABLE)	
M	MOTORIZED DAMPER	
SD T	SMOKE DETECTOR	
<u>(C02</u> )	CO2 SENSOR	
(T)	THERMOSTAT OR TEMPERATURE SENSOR	
H	HUMIDISTAT OR HUMIDITY SENSOR	
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW	

PIPING LEGEND		
ABBREV.	DESCRIPTION	
CA	COMPRESSED AIR PIPING	
CD	CONDENSATE DRAIN PIPING	
DT	DRAIN TILE	
F	FIRE PROTECTION PIPING	
FOR	FUEL OIL RETURN PIPING	
F0S	FUEL OIL SUPPLY PIPING	
G	NATURAL GAS PIPING	
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING	
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING	
CW	DOMESTIC COLD WATER PIPING	
	NON POTABLE COLD WATER PIPING	
TW	TEMPERED WATER PIPING	
——HW———	DOMESTIC HOT WATER PIPING	
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE	
——HWR——	DOMESTIC HOT WATER RETURN PIPING	
	SANITARY WASTE PIPING	
PSAN	PUMPED SANITARY PIPING	
V	VENT PIPING	
ST	STORM SEWER PIPING	
PST	PUMPED STORM PIPING	
RC	RAIN CONDUCTOR PIPING	
ORC	OVERFLOW RAIN CONDUCTOR PIPING	
CHWR	CHILLED WATER RETURN PIPING	
CHWS	CHILLED WATER SUPPLY PIPING	
CWR	CONDENSER WATER RETURN PIPING	
CWS	CONDENSER WATER SUPPLY PIPING	
—HHWR—	HEATING HOT WATER RETURN PIPING	
—HHWS—	HEATING HOT WATER SUPPLY PIPING	
HPLR	HEAT PUMP LOOP RETURN PIPING	
HPLS	HEAT PUMP LOOP SUPPLY PIPING	
RL	REFRIGERANT LIQUID PIPING	
RS	REFRIGERANT SUCTION PIPING	
HGB	HOT GAS BY–PASS PIPING	
GXHR	GEO HEAT EXCHANGE RETURN	
GXHS	GEO HEAT EXCHANGE SUPPLY	
STM	STEAM PIPING	
HPS	HIGH PRESSURE STEAM PIPING	
LPS	LOW PRESSURE STEAM PIPING	
CR	STEAM CONDENSATE RETURN PIPING	
PCR	PUMPED STEAM CONDENSATE RETURN PIPING	
LPC	LOW PRESSURE CONDENSATE PIPING	
——HPC——	HIGH PRESSURE CONDENSATE PIPING	
MA	MEDICAL AIR PIPING	
N	NITROGEN GAS PIPING	
	UXYGEN GAS PIPING	
——VAC——	VACUUM PIPING	

	APPLICABLE CODES AND REGULATIONS
YEAR	CODE
2021	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2021	MICHIGAN PLUMBING CODE
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES
-	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)

DRAWING INDEX							
SHT NO		DESCRIPTION					
M0.00	MECH	MECHANICAL GENERAL INFORMATION					
M1.10	MECH	MECHANICAL PLAN					
	l	DRAWING NOTATION					
SYMB	OL	DESCRIPTION					
1	$\rangle$	NEW WORK KEY NOTE NO. 1					
$\sum_{1}$	7	DEMOLITION KEY NOTE NO. 1					
<u>EF-</u>	. <u>1</u>	EQUIPMENT TAG					
S-1 10x10 100-2		AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10x10$ CFM = $100$ (TYPICAL FOR 2)					
		EXISTING DEVICES OR EQUIPMENT					
_		NEW OR MODIFIED DEVICES OR EQUIPMENT					
4 / / / /		EXISTING SYSTEM COMPONENT TO BE REMOVED					
<b>\$</b>		POINT OF NEW CONNECTION					
SHEET M5.2 ON WHICH SECTION DRAWN							
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)							
SYSTEM RISER DESIGNATION X-# RISER NUMBER SYSTARWELL PRESSURIZATION V: VENT E: EXHAUST							

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
	•
L	
	-
	-
L	
L	-
DRAWN	REB
CHECKED	DGN
APPROVED	

KEY PLAN

![](_page_256_Picture_12.jpeg)

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![](_page_256_Picture_14.jpeg)

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Anchor Bay Schools Ashley Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER

![](_page_256_Picture_20.jpeg)

SHEET NUMBER

M0.00

![](_page_257_Picture_0.jpeg)

![](_page_257_Figure_1.jpeg)

![](_page_257_Picture_2.jpeg)

### PLUMBING FIXTURES/SPECIALTIES SCHEDULE

ITEM	PIPE CONNECTION SIZES				MANUFACTURER &		
	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES	
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION	

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

![](_page_257_Figure_6.jpeg)

EEL HINGED
(FILTERED).

### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

 $\langle \# \rangle$ 

#### **KEYED NOTES**

1. REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN

![](_page_257_Picture_31.jpeg)

![](_page_257_Picture_32.jpeg)

# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_257_Picture_35.jpeg)

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Anchor Bay Schools Ashley Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL PLAN

![](_page_257_Picture_40.jpeg)

![](_page_257_Picture_41.jpeg)

![](_page_257_Picture_42.jpeg)

![](_page_257_Picture_43.jpeg)

M1.10

![](_page_257_Picture_45.jpeg)

	COPPER FEEDER SCHEDULE							
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	30N	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G

![](_page_258_Figure_6.jpeg)

#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT

POWER SYMBOL LIST			
SYMBOL	DESCRIPTION		
•	CONDUIT DOWN		
0	CONDUIT UP		
4	DISCONNECT SWITCH - NON FUSED		
L	DISCONNECT SWITCH - FUSED		
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER		
	ELECTRICAL PANEL		
$\bullet$	GROUNDING ROD		
Ē	GROUND		
<del></del>	GROUNDING BAR		
J	JUNCTION BOX		
Μ	METER		
$\mathcal{N}$	MOTOR – SINGLE PHASE		
$\mathbf{V}$	MOTOR – THREE PHASE		
\$м	MOTOR RATED SWITCH		
φ	POWER RECEPTACLE – SIMPLEX TYPE		
φ	POWER RECEPTACLE – DUPLEX TYPE		
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER		
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE		
+	POWER RECEPTACLE – QUADRUPLEX TYPE		
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE		
PT	POWER RECEPTACLE – POKE THRU TYPE		
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE		
TC	TIME CLOCK		
Т	TRANSFORMER		
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS		

ALL DEVICE RATIN AND SCHEDULES. NGS/SIZES SHALL BE COORDINATED WITH PLANS

FIR	FIRE ALARM SYMBOL LIST				
SYMBOL	DESCRIPTION				
FA	AUDIBLE DEVICE/WALL MOUNTED				
F	VISUAL DEVICE/WALL MOUNTED				
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED				
F	AUDIBLE DEVICE/CEILING MOUNTED				
Ē	VISUAL DEVICE/CEILING MOUNTED				
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED				
¢\$	CO ALARM/SMOKE DETECTOR				
Ś	SMOKE DETECTOR				
Ô	CO ALARM				
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR				
H	HEAT DETECTOR				
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET				
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)				
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)				
F	MANUAL PULL STATION				
FS	FLOW SWITCH				
TS	TAMPER SWITCH				
FAA	FIRE ALARM ANNUNCIATOR PANEL				
FACP	FIRE ALARM CONTROL PANEL				
1/0	INPUT/OUTPUT CONTROL MODULE				
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND				

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELEC	CTRICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
۵FF	ABOVE FINISHED FLOOR
Δ	
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
С	CONDUIT OR CEILING MOUNTED
СВ	CIRCUIT BREAKER
CL	CONTROL LOAD
CU	COPPER
СТ	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	
	LIGHTING PANEL
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
PH. OR Ø	PHASE
Р	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
KMC	
τρρ	TELEDHONE RACKDOADD
TYP	
	UNDER COUNTER
UI	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT AMPERE
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

#### DRAWING INDEX

SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
E1.10	ELECTRICAL PLAN

DRAWING NOTATION			
SYMBOL	DESCRIPTION		
L1	LIGHTING FIXTURE TAG		
$\langle 1 \rangle$	CONSTRUCTION KEY NOTE NUMBER 1		
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1		
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)		
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)		
EQUIPMENT	EQUIPMENT TAG		
	EXISTING DEVICES OR EQUIPMENT		
	NEW OR MODIFIED DEVICES OR EQUIPMENT		
	NEW OR MODIFIED UNDERGROUND WIRING		
	EXISTING SYSTEM COMPONENT TO BE REMOVED		
•	POINT OF NEW CONNECTION		
	SECTION NUMBER 4		
	4 E5.2		

SHEET E5.2 ON WHICH SECTION IS DRAWN
SECTION NO. 6
E5.2 SCALE: 1/4" = 1' - 0" SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG SCENE SCHEDULE ID 'A' (MAY NOT APPEAR ON EVERY TAG) DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL

DEVICES REQUIRED IN THE AREA.

	APPLICABLE CODES AND REGULATIONS							
YEAR	CODE							
2021	MICHIGAN BUILDING CODE							
2015	MICHIGAN ENERGY CODE							
2015	MICHIGAN RESIDENTIAL CODE							
2015	MICHIGAN REHABILITATION CODE							
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8							
2023	NATIONAL ELECTRICAL CODE (NFPA 70)							
2013	NFPA 20							
2013	NFPA 72							
2013	NFPA 101							
2013	NFPA 110							
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES							
985	DETROIT ELEVATOR CODE							

ISSUE DATE ISSUED FOR BIDS 05/08/2025 DRAWN CHECKED RWC APPROVED SET

![](_page_258_Picture_24.jpeg)

FRENCH 2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_258_Picture_26.jpeg)

Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com (C) 2025 SES, INC. SES Project #23 0019 01 PROJECT

# Anchor Bay Schools Ashley Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER

![](_page_258_Picture_32.jpeg)

SHEET NUMBER

E0.00

![](_page_258_Picture_34.jpeg)

![](_page_259_Figure_0.jpeg)

PANEL NAME: (E) RP-D LOCATION: EXISTING SOURCE: EXISTING						I BUS OUNI	MAII SING D BU	N: 12 G: 12 IS: S1	25 ML 25A AND	ARD		L-L VOLTAGE: 208 L-N VOLTAGE: 120 PHASE: 1 WIDE: 2				
	SIZE. LAISTING				741	NEU	JTRA	<b>L:</b> 10	)0%	CL			MIN SC INTERF	RUPT RATING	: 10,000	
LOAD DESCRIPTION	LIGHTIN G LOAD	RECEPTACLE		N ON - CONTIN UOUS LOAD	OCPD	СКТ	L1	L2	СКТ	OCPD	NON- CONTINUOUS LOAD	CONTINUOUS LOAD	RECEPTACLE	LIGHTING LOAD	LOAD DESC	
(E) LIBRARY LIGHTS	1200				20	1			2	20			1000		(E) LOAD	
(E) LIBRARY & GYM HALL PLUGS		1000			20	3			4	20			1000		(E) LIBRARY & GYM HALL	
(E) LIBRARY & GYM HALL PLUGS		1000			20	5			6	20			1000		(E) LIBRARY NORTH & EA	
(E) LOAD		1000			20	7			8	20			1000		(E) LIBRARY LIGHTS	
(E) LOAD		1000			20	9			10	20			1000		(E) LIBRARY LIGHTS	
(E) LIBRARY & GYM HALL PLUGS		1000			20	11			12	20			1000		(E) LIBRARY & GYM HALL	
(E) LIBRARY & GYM HALL PLUGS		1000			20	13			14	20			500		(E) POPCORN MAKER	
(E) HANDICAP DOOR OPER		500			20	15			16	20	1150				NEW GFCI CB - (2) WATE	
SPACE						17			18	20	575				NEW GFCI CB - WATER C	
SPACE						19			20						SPACE	
SPACE						21			22						SPACE	
SPACE						23			24						SPACE	
SPACE						25			26						SPACE	
SPACE						27			28						SPACE	
SPACE						29			30						SPACE	
								,			-				-	
		CONNEC					DEN	<b>AAN</b>	)			DEMAN				
LOAD TYPE	L1		L2				FAG	CTOR			LI		L2	TOTAL		
LIGHTING LOAD (VA)	1200		0	1200			1	.25			1500		0	1500		
RECEPTACLE LOAD (VA)	6500		6500	13000		1.00	) (FIR	ST 10	)KVA)		5000		5000	10000		
		Amou	nt over 10kVA	3000		0.	50 (>	> 10K	VA)		750		750	1500	ARTICLE 220.44 OF THE	
CONTINUOUS LOAD (VA)	0		0	0			1	.00			0		0	0		
NON-CONTINUOUS (VA)	575		1150	1725			1	.00			575		1150	1725	1	
TOTAL LOAD (KVA)	8.28		7.65	18.93	125% C	of Lig	HT/C	CONT	AND	RECEPT	7.83		6.90	14.73		
	69.0		63.8	91.0	(<10KV	A) LC	DAD	PLUS	OTHE	R LOAD	65.2		57.5	70.8		
MINIMUM FEEDER SIZE (A)	82.5		74.2	104.8	< P	ER N	EC A	RTIC	LE 215	5.2>	78.8		67.9	84.6		

![](_page_259_Picture_2.jpeg)

## $\mathbf{\widehat{SCALE:1/32"}} = 1'-0"$

	Panel Designation	n: <b>(E)</b>	RP-N	۸M			в.	Maiı	<b>n:</b> 2:	50 A M	LO			P-P \	/oltage:	208
		EXISTING	2			_	DU	ssing	<b>j</b> ; Z:					F-IN V	voliage:	120
	Fed Fron	n: Existing	3			G	Foun	d Bu	<b>s:</b> S	AND	ARD				Phase:	3
	Feeder Size	EXISTING	3				Μοι	nting	<b>g:</b> SI	JRFAC	)E				Wire:	: 4
							Ne	eutra	<b>l:</b> 1(	00%		M	in SC In	errupting	g Rating:	10,000
	Bomarks	Light	Recept	Cont	nonC	OC	CKT	Ø	øø	CKT	OC	nonC	Cont	Recept	Light	Bomarka
	Remarks	Load	Load	Load	Load	Prot			вС		Prot	Load	Load	Load	Load	Reliniks
JAD DESCRIPTION	NEW GFCICB - (2) WATER COOLERS				1150	20	1	X		2	20		1000			(E) UV-2 C.R. B103
	SPARE					20	3		X	4	20					SPARE
	SPARE					20	5		X	6	20					SPARE
GYM HALL PLUGS	SPARE					20	7	X		8	20					SPARE
ORTH & FAST WALL PLUGS	SPARE					20	9		x	10	20					SPARE
CHTS	SPARE					20	11		X	12	20					SPARE
STHS	SPARE					20	13	X		14	20					SPARE
SYM HALL PLUGS	SPARE					20	15		x	16	20					SPARE
MAKER	SPARE					20	17		Tx	18	20					SPARE
	SPARE					20	19	x		20	20					SPARE
	SPARE					20	21		x	22	20					SPARE
	SPARE					20	23		⊤x	24	20					SPARE
	SPARE					20	25	x		26	20					SPARE
	SPARE					20	27		x	28	20					SPARE
	SPARE					20	29		⊤x	30	20					SPARE
				3000			31	x		32			3000			
	(E) UV-1 C.R. A109			3000		40	33		x	34	40		3000			(E) UV-1 C.R. A104
				3000		-	35		x	36			3000			
		_		3000			27		+	20			3000			
				0000		40		<b> ^</b>  ,		30	40					
	(E) 0 V-1 C.R. A100			3000		40	39	<u>   </u>	<u>×</u>	40	40		3000			(E) 0 V-1 C.R. A103
DEMAND FACTOR PER				3000			41			42			3000			
																7
A OF THE NEC			Connec	ted Load		4		Den	nanc	1		Demand Load				
	Load Description	ØA	ØB	ØC	Total			Fa	ctor			ØA	ØB	ØC	Total	
	Lighting or Continous Load (Volt-Amps)	0	0	0	0			1.	25			0	0	0	0	
	180VA Receptacle Load (Volt-Amps)	0	0	0	0		1.0	0 (Firs	st 10	kVA)		0	0	0	0	Receptacle Demand Factor per Article
		Am	ount ove	er 10kVA	0		0.	.50 (>	10k	VA)		0	0	0	0	220.44 of the National Electrical Code.
	Continuous Load (Volt-Amps)	13000	12000	12000	37000			1.	25			16250	15000	15000	46250	
	Non-Continuous Load (Volt-Amps)	1150	0	0	1150			1.	00			1150	0	0	1150	
	Total Load (kVA)	14.15	12.00	12.00	38.15	125%	of Lig	ghł/C	Cont	and Re	ecept	17.40	15.00	15.00	47.40	]
	Total Ampacity (Amps)	117.8	99.9	99.9	105.9	(<10	kVA)	load	plus	other	load	144.9	124.9	124.9	131.6	]
	Minimum Feeder Sizing (Amps)	117.8	99.9	99.9	105.9	]<	per N	EC A	rticl	e 215.2	2>	144.9	124.9	124.9	131.6	]

## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- 3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### $\mathbb{A}$

#### DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### **NEW POWER GENERAL NOTES**

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

#### NEW WORK KEYED NOTES #

- 1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.
- 2. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND NEW BRANCH CIRCUIT WIRING TO PANEL, AS INDICATED. ROUTING OF NEW 3/4" CONDUIT SHALL BE DETERMINED IN FIELD. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

KEY PLAN

![](_page_259_Picture_29.jpeg)

![](_page_259_Picture_30.jpeg)

# **FRENCH**

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_259_Picture_33.jpeg)

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## Anchor Bay Schools Ashley Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL PLAN

![](_page_259_Figure_38.jpeg)

2025-019

PROJECT NUMBER

![](_page_259_Picture_40.jpeg)

![](_page_259_Picture_41.jpeg)

![](_page_259_Picture_44.jpeg)

# ANCHOR BAY SCHOOL DISTRICT

# **GREAT OAKS ELEMENTARY** PLUMBING UPGRADES CHESTERFIELD TWP, MICHIGAN 2025-019 PROJECT NO.

MAY 08, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURA	

A0.01 ARCHITECTURAL REFERENCE SHEET A0.02 CODE PLAN

A2.10 COMPOSITE FLOOR PLAN

ELECTRICAL MECHANICAL M0.00 MECHANICAL GENERAL INFORMATION E0.00 ELECTRICAL GENERAL INFORMATION M1.10 MECHANICAL PLAN E1.10 ELECTRICAL PLAN

![](_page_260_Picture_10.jpeg)

![](_page_260_Picture_11.jpeg)

![](_page_260_Picture_12.jpeg)

![](_page_260_Figure_13.jpeg)

![](_page_260_Picture_14.jpeg)

REFERENCE LOCATION MAP

![](_page_260_Picture_16.jpeg)

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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT

![](_page_261_Figure_4.jpeg)

DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC

![](_page_261_Figure_31.jpeg)

![](_page_261_Figure_32.jpeg)

![](_page_261_Figure_33.jpeg)

![](_page_261_Figure_35.jpeg)

![](_page_261_Figure_36.jpeg)

![](_page_261_Figure_37.jpeg)

![](_page_261_Figure_39.jpeg)

![](_page_261_Figure_41.jpeg)

![](_page_261_Figure_43.jpeg)

TACK BOARDS AND MARKER BOARDS

![](_page_262_Figure_0.jpeg)

![](_page_262_Picture_1.jpeg)

![](_page_262_Picture_2.jpeg)

#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 468. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 62,738 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

#### ) DESIGN CODES

GREAT OAKS ELEMENTARY

RESPONSIBLE CHARGE.

2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)

NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6) A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN

CLASSROOM A109 CLASSROOM A110 TOILET A113 • TOILE CORRIDOR TOILET • TOILET A112 CLASSROOM A107 CLASSROOM A108 WORKRM B102 WORKRM B106 OFFICE B141 STUDENT SERVICES EXISTING CLASSROOM B113 KINDERGARTEN B101 TOILET B103 OFFICE B142 CORF COAT B108 COAT B104 OFFICE B143 EXISTING CORRIDOR B112 COAT B133 COAT B129 EXISTING CLASSROOM B128 TOILET B134 KINDERGARTEN B136 B135 WORKRM • 

KEY PLAN

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_262_Picture_20.jpeg)

#### PROJECT

Anchor Bay Schools Great Oaks Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET CODE PLAN

PROJECT NUMBER 2025-019 SHEET NUMBER A0.02

![](_page_263_Figure_0.jpeg)

KEY PLAN

![](_page_263_Picture_8.jpeg)

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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CHECKED	CAW
APPROVED	DCJ

![](_page_263_Picture_10.jpeg)

PROJECT

Anchor Bay Schools Great Oaks Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET COMPOSITE FLOOR PLAN

PROJECT NUMBER 2025-019 SHEET NUMBER A2.10

MECI	HANICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL LINIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
САР	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
СО	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB IEMPERATURE
DEG	
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
	FULL LOAD AMPS
	FLOUR
FFD	FLINNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HUSE BIBB
HU LLD	
l <sup>111<sup>-</sup></sup>	

MECI	HANICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
HR	HOUR
HTG	HEATING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INST	INSTALLED
INV	INVERT
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
МВН	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOP	MAXIMUM OVER-CURRENT PROTECTION
N.C.	NOISE CRITERIA
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	
	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
	OUTSIDE DIAMETER
	OVERELOW ROOF SUMP
0587	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP (FEFT OF WATER)
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
PSIG	POUNDS PER SQUARE INCH – GAUGF
PT	PRESSURE / TEMPERATURE PORT
RA	RETURN AIR
RH	RELATIVE HUMIDITY
REQD	REQUIRED
REL.A	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
SA	SUPPLY AIR
SH	SHOWER
SP	STATIC PRESSURE
SqFt / SF	SQUARE FOOT/SQUARE FEET
SS	SERVICE SINK
TC	TEMPERATURE CONTROL
Т&Р	TEMPERATURE AND PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE

Μ ABBF W& W WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_[ \_\_\_\_E \_\_\_\_X $\rightarrow$ \_\_\_> --\_\_\_\_¤ \_\_\_\_/*/* CHO 6 \_\_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
-----------------------	------------

REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECH	IANICAL PIPING SYMBOLS
ABBREV.	DESCRIPTION
o	PIPE ELBOW UP
	PIPE ELBOW DOWN
<del></del>	PIPE TEE DOWN
	DIRECTION OF FLOW
	UNION
	STRAINER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
, M	
	GLUBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
<u>→</u>	BACKWATER VALVE
<u>k</u>	ANGLE VALVE
	CHECK VALVE (SWING)
	CHECK VALVE (SPRING)
I∕⊽I	PLUG VALVE
	NEEDLE VALVE
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)
↓	PRESSURE REGULATING VALVE
X	SOLENOID VALVE
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)
$\bigcirc$	CENTRIFUGAL FAN
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE
	TRAP (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)
Ô	ROOF SUMP
——⊖ C0	CLEAN OUT (IN FLOOR)
//co	CLEAN OUT (IN LINE)
	CLEAN OUT (WALL)
BFP	BACKFLOW PREVENTER
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY
+	HOSE BIBB, WALL HYDRANT
	DIRECTION OF PIPE PITCH
$\odot$	SPRINKLER HEAD (UPRIGHT)
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)
—FS	FLOW SWITCH
<u> </u>	SIAMESE CONNECTION (YARD)
, ,	SIAMESE CONNECTION (WALL MOUNTED)
× H	FIRE HYDRANT
	FLOW MEASURING DEVICE
<u>≫</u> ⊼	BALANCING VAI VF
	COMBINATION FLOW MEASURING AND RALANCING DEVICE
<u>ド</u> 「天MAV	
¥	

MECHANICAL SYMBOLS							
ABBREV.	DESCRIPTION						
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)						
	RECTANGULAR TAKE-OFF (DOUBLE LINE)						
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)						
	ROUND TAKE-OFF (DOUBLE LINE)						
	SPIN-IN FITTING (WITH VOLUME DAMPER)						
	ELBOW (WITH TURNING VANES)						
	RADIUS RECTANGULAR ELBOW						
	RADIUS ROUND ELBOW						
	RECTANGULAR ELBOW UP						
	ROUND ELBOW UP						
	RECTANGULAR ELBOW DOWN						
	ROUND ELBOW DOWN						
	CONCENTRIC TRANSITION (DOUBLE LINE)						
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)						
	ECCENTRIC TRANSITION (DOUBLE LINE)						
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)						
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)						
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)						
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)						
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)						
	FLEXIBLE CONNECTION						
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER						
,−⊋	SUPPLY DIFFUSER						
	LINEAR SLOT DIFFUSER						
$\leftarrow$	RETURN OR EXHAUST GRILLE						
<b></b>	TRANSFER GRILLE						
	CROSS SECTION OF SUPPLY AIR DUCT						
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT						
	EXISTING FIRE DAMPER (HORIZONTAL)						
	EXISTING						
	FIRE DAMPER (VERTICAL) NEW						
<u> </u>	EXISTING SMOKE DAMPER						
	NEW						
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)						
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER						
	NEW (HORIZONTAL)						
	VOLUME DAMPER (MANUALLY ADJUSTABLE)						
M	MOTORIZED DAMPER						
SD T	SMOKE DETECTOR						
<u>(C02</u> )	CO2 SENSOR						
(T)	THERMOSTAT OR TEMPERATURE SENSOR						
H	HUMIDISTAT OR HUMIDITY SENSOR						
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW						

	PIPING LEGEND
ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
——F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
F0S	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
——HW——	DOMESTIC HOT WATER PIPING
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
CHWR	CHILLED WATER RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
	HEAT PUMP LOOP RETURN PIPING
	HEAT PUMP LOOP SUPPLY PIPING
	REFRIGERANT LIQUID PIPING
—-кs——	REFRIGERANT SUCTION PIPING
	CEO HEAT EVOLUTION
	GEO HEAT EXCHANCE SUDDLY
NTS	STEAM DIDING
HPS	
	I OW PRESSURE STEAM PIPING
CR	STEAM CONDENSATE RETURN PIPING
	PUMPED STEAM CONDENSATE RETURN PIPING
I PC	LOW PRESSURE CONDENSATE PIPING
HPC	HIGH PRESSURE CONDENSATE PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN GAS PIPING
02	OXYGEN GAS PIPING
	VACUUM PIPING

APPLICABLE CODES AND REGULATIONS						
YEAR	CODE					
2021	MICHIGAN BUILDING CODE					
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS					
2021	MICHIGAN PLUMBING CODE					
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES					
-	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)					

DRAWING INDEX										
SHT NO		DESCRIPTION								
M0.00	MECHANICAL GENERAL INFORMATION									
M1.10	MECH	ANICAL PLAN								
		DRAWING NOTATION								
SYMB	OL	DESCRIPTION								
1	$\rangle$	NEW WORK KEY NOTE NO. 1								
$\int_{1}$	7	DEMOLITION KEY NOTE NO. 1								
<u>EF–</u>	<u>· 1</u>	EQUIPMENT TAG								
S-1 10x10 100-2		AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10x10$ CFM = $100$ (TYPICAL FOR 2)								
		EXISTING DEVICES OR EQUIPMENT								
		NEW OR MODIFIED DEVICES OR EQUIPMENT								
<del>\ / /</del>		EXISTING SYSTEM COMPONENT TO BE REMOVED								
<b>`</b> •		POINT OF NEW CONNECTION								
	<b>_</b>	SHEET M5.2 ON WHICH SECTION DRAWN								
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)										
Õ	C-#	YSTEM RISER S: SANITARY ESIGNATION D: DOMESTIC WATER H: HVAC PIPING SP: STAIRWELL PRESSURIZATION V: VENT - RISER NUMBER E: EXHAUST								

ISSUE DATE		
05/08/2025	BIDS	
DRAWN	RFB	
CHECKED	DGN	

KEY PLAN

![](_page_264_Picture_12.jpeg)

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_264_Picture_14.jpeg)

**Strategic Energy Solutions**® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. SES Project #23 0019 01 PROJECT

## Anchor Bay Schools Great Oaks Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER

![](_page_264_Picture_20.jpeg)

SHEET NUMBER

M0.00

		PLUMBING FIXTURES/SPECIALTIES SCHEDULE								
тао	BARRIER	ITEM	PIPE CONNECTION SIZES			ZES	MANUFACTURER &			
	TAG FREE		WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES		
	EWC-1	–1 Y SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER		1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP—PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS ST DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION (	
	NOTES:									

3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.

![](_page_265_Picture_1.jpeg)

![](_page_265_Figure_2.jpeg)

![](_page_265_Picture_3.jpeg)

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

EEL HINGED
FILTERED).

### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

 $\langle \# \rangle$ 

1. REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES. KEY PLAN

![](_page_265_Picture_30.jpeg)

![](_page_265_Picture_31.jpeg)

# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_265_Picture_34.jpeg)

Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com (C) 2025 SES, INC. SES Project #23 0019 01 PROJECT

## Anchor Bay Schools Great Oaks Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET MECHANICAL PLAN

![](_page_265_Picture_39.jpeg)

![](_page_265_Picture_40.jpeg)

![](_page_265_Picture_41.jpeg)

![](_page_265_Picture_42.jpeg)

![](_page_265_Picture_44.jpeg)

	COPPER FEEDER SCHEDULE							
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G

![](_page_266_Figure_6.jpeg)

#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT

	POWER SYMBOL LIST
SYMBOL	DESCRIPTION
•	CONDUIT DOWN
0	CONDUIT UP
4	DISCONNECT SWITCH - NON FUSED
L	DISCONNECT SWITCH - FUSED
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
$\bullet$	GROUNDING ROD
Ē	GROUND
<del></del>	GROUNDING BAR
J	JUNCTION BOX
Μ	METER
$\mathcal{N}$	MOTOR – SINGLE PHASE
$\mathbf{V}$	MOTOR – THREE PHASE
\$м	MOTOR RATED SWITCH
φ	POWER RECEPTACLE – SIMPLEX TYPE
φ	POWER RECEPTACLE – DUPLEX TYPE
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
+	POWER RECEPTACLE – QUADRUPLEX TYPE
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE
PT	POWER RECEPTACLE – POKE THRU TYPE
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE
TC	TIME CLOCK
Т	TRANSFORMER
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS

ALL DEVICE RATIN AND SCHEDULES. NGS/SIZES SHALL BE COORDINATED WITH PLANS

FIRE ALARM SYMBOL LIST		
SYMBOL	DESCRIPTION	
F	AUDIBLE DEVICE/WALL MOUNTED	
F	VISUAL DEVICE/WALL MOUNTED	
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED	
F	AUDIBLE DEVICE/CEILING MOUNTED	
Ē	VISUAL DEVICE/CEILING MOUNTED	
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED	
¢\$	CO ALARM/SMOKE DETECTOR	
Ś	SMOKE DETECTOR	
Ô	CO ALARM	
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR	
H	HEAT DETECTOR	
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET	
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)	
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)	
F	MANUAL PULL STATION	
FS	FLOW SWITCH	
TS	TAMPER SWITCH	
FAA	FIRE ALARM ANNUNCIATOR PANEL	
FACP	FIRE ALARM CONTROL PANEL	
1/0	INPUT/OUTPUT CONTROL MODULE	
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND	

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELEC	CTRICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION		
AFF	ABOVE FINISHED FLOOR		
A	AMPERE		
AF	AMPERE FUSE/AMPERE FRAME		
AWG	AMERICAN WIRE GAUGE		
AT	AMPERE TRIP		
ATS	AUTOMATIC TRANSFER SWITCH		
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)		
С	CONDUIT OR CEILING MOUNTED		
СВ	CIRCUIT BREAKER		
CL	CONTROL LOAD		
CU	COPPER		
CT	CURRENT TRANSFORMER		
DIA			
DISC			
EWC			
FPO	EMERGENCY POWER OFF		
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK		
FA	FIRE ALARM		
FACP	FIRE ALARM CONTROL PANEL		
FLA	FULL LOAD AMPS		
F	FUSE		
G/GRD	GROUND		
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER		
HOA	HAND-OFF-AUTO		
HP	HORSEPOWER		
IG	ISOLATED GROUND		
KV	KILOVOLT		
KVA	KILOVOLT AMPERE		
KW	KILOWATT		
KWH	KILOWATT HOUR		
LP	LIGHTING PANEL		
MCB	MAIN CIRCUIT BREAKER		
MLO			
MAX	MAXIMUM		
MIN	MINIMUM		
NEC	NATIONAL ELECTRICAL CODE		
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.		
N/NEU	NEUTRAL		
NF	NON-FUSIBLE		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NIC	NOT IN CONTRACT		
PH. OR Ø	PHASE		
P	POLE		
PF			
۲۷C رو)	RELOCATED EXISTING ELECTRICAL EQUIDALENT		
(r) (RR)	REMOVE AND REINSTALL		
RMC	RIGID METALLIC CONDUIT		
RP	RECEPTACLE PANEL		
TBB	TELEPHONE BACKBOARD		
TYP.	TYPICAL		
UC	UNDER COUNTER		
UL	UNDERWRITERS LABORATORIES		
UPS	UNINTERRUPTIBLE POWER SUPPLY		
USB	UNIVERSAL SERIAL BUS		
V	VOLT		
VA	VOLT AMPERE		
W	WATT		
WG	WIRE GUARD		
WP	WEATHERPROOF		
XFMR	TRANSFORMER		

#### DRAWING INDEX

DESCRIPTION

SHT NO

00.0	ELECTRICAL GENERAL INFORMATION
1.10	ELECTRICAL PLAN

DRAWING NOTATION		
SYMBOL	DESCRIPTION	
L1	LIGHTING FIXTURE TAG	
$\langle 1 \rangle$	CONSTRUCTION KEY NOTE NUMBER 1	
1	DEMOLITION KEY NOTE NUMBER 1	
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)	
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)	
QUIPMENT	EQUIPMENT TAG	
	EXISTING DEVICES OR EQUIPMENT	
	NEW OR MODIFIED DEVICES OR EQUIPMENT	
	NEW OR MODIFIED UNDERGROUND WIRING	
<u></u>	EXISTING SYSTEM COMPONENT TO BE REMOVED	
•	POINT OF NEW CONNECTION	
	SECTION NUMBER 4	
	4	

E5.2 SHEET E5.2 ON WHICH SECTION IS DRAWN
SECTION NO. 6
E5.2 SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG SCENE SCHEDULE ID 'A' (MAY NOT APPEAR ON
EVERY TAG) SPACE TYPE '1' Z1 DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.

APPLICABLE CODES AND REGULATIONS		
YEAR	CODE	
2021	MICHIGAN BUILDING CODE	
2015	MICHIGAN ENERGY CODE	
2015	MICHIGAN RESIDENTIAL CODE	
2015	MICHIGAN REHABILITATION CODE	
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8	
2023	NATIONAL ELECTRICAL CODE (NFPA 70)	
2013	NFPA 20	
2013	NFPA 72	
2013	NFPA 101	
2013	NFPA 110	
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES	
985	DETROIT ELEVATOR CODE	

ISSUE DATE ISSUED FOR BIDS 05/08/2025 DRAWN CHECKED RWC APPROVED SET

![](_page_266_Picture_24.jpeg)

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![](_page_266_Picture_26.jpeg)

Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. SES Project #23 0019 01

## Anchor Bay Schools Great Oaks Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER

![](_page_266_Picture_32.jpeg)

E0.00

![](_page_266_Picture_34.jpeg)

![](_page_267_Figure_0.jpeg)

 $\underbrace{\textbf{ELECTRICAL PLAN}}_{\text{SCALE:}1/32" = 1'-0"}$ 

## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

### <u>DEMOLITION KEYED NOTES</u>

 ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

### NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

### (#) <u>NEW WORK KEYED NOTES</u>

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

![](_page_267_Picture_22.jpeg)

![](_page_267_Picture_23.jpeg)

![](_page_267_Picture_24.jpeg)

# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_267_Picture_27.jpeg)

Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. SES Project #23 0019 01 PROJECT

## Anchor Bay Schools Great Oaks Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET ELECTRICAL PLAN

![](_page_267_Picture_32.jpeg)

![](_page_267_Picture_33.jpeg)

![](_page_267_Picture_34.jpeg)

![](_page_267_Picture_35.jpeg)

![](_page_267_Picture_37.jpeg)

# ANCHOR BAY SCHOOL DISTRICT

# LIGHTHOUSE ELEMENTARY PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURAL
---------------

A0.01 ARCHITECTURAL REFERENCE SHEET A0.02 CODE PLANS

A2.10 COMPOSITE FLOOR PLAN

MECHANICAL M0.00 MECHANICAL GENERAL INFORMATION M1.10 MECHANICAL PLAN

![](_page_268_Picture_10.jpeg)

ELECTRICAL

E0.00 ELECTRICAL GENERAL INFORMATION E1.10 ELECTRICAL PLAN

![](_page_268_Picture_13.jpeg)

# FRENCH

51880 WASHINGTON ST, NEW BALTIMORE, MICHIGAN, 48047

![](_page_268_Picture_16.jpeg)

![](_page_268_Picture_17.jpeg)

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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT

![](_page_269_Figure_4.jpeg)

DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC

![](_page_269_Figure_31.jpeg)

![](_page_269_Figure_32.jpeg)

![](_page_269_Figure_33.jpeg)

![](_page_269_Figure_35.jpeg)

![](_page_269_Figure_36.jpeg)

![](_page_269_Figure_37.jpeg)

![](_page_269_Figure_39.jpeg)

![](_page_269_Figure_41.jpeg)

![](_page_269_Figure_43.jpeg)

TACK BOARDS AND MARKER BOARDS

![](_page_270_Figure_0.jpeg)

![](_page_270_Picture_1.jpeg)

#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 449. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 86,580 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

GREAT OAKS ELEMENTARY ) DESIGN CODES

2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)

NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

 2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
 A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
	-
DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_270_Picture_17.jpeg)

#### PROJECT

Anchor Bay Schools Light House Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET CODE PLAN

![](_page_270_Picture_22.jpeg)

![](_page_271_Figure_0.jpeg)

![](_page_271_Picture_1.jpeg)

— EXISTING GLAZED CMU MECH

- STAINLESS PLATE -COORDINATE SIZE ELEC WATER COOLER/BOTTLE FILLER - REFER TO

— EXISTING GLAZED CMU BASE

- EXISTING GLAZED CMU - STAINLESS PLATE -COORDINATE SIZE ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH BASE

PROPOSED

![](_page_271_Picture_9.jpeg)

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
	-
	-
	-
	-
	-
	-
	-
	-
	_
	-
	-
	-
DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_271_Picture_11.jpeg)

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

PROJECT

Anchor Bay Schools Light House Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET FLOOR PLAN FLOOR PLAN

![](_page_271_Picture_17.jpeg)

MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE	
AD	ACCESS DOOR	
AE	AIR EXTRACTOR	
AFF	ABOVE FINISHED FLOOR	
APD	AIR PRESSURE DROP	
ASR	AUTOMATIC SPRINKLER RISER	
BFP	BACKFLOW PREVENTER	
BHP	BRAKE HORSEPOWER	
BTU	BRITISH THERMAL LINIT	
BTUH	BRITISH THERMAL UNITS PER HOUR	
BWV	BACKWATER VALVE	
САР	CAPACITY	
CAV	CONSTANT AIR VOLUME	
CFH	CUBIC FEET PER HOUR	
CFM	CUBIC FEET PER MINUTE	
CIRC	CIRCULATING	
CLG	COOLING	
СО	CLEAN OUT	
CONT	CONTINUATION OR CONTINUED	
CONV	CONVECTOR	
CUH	CABINET UNIT HEATER	
CV	CONTROL VALVE	
DB	DRY BULB IEMPERATURE	
DEG		
DTC	DRAIN TILE CONNECTION	
DWH	DOMESTIC WATER HEATER	
(E)	EXISTING	
EA/EXH	EXHAUST AIR	
EAT	ENTERING AIR TEMPERATURE	
EDB	ENTERING DRY BULB TEMPERATURE	
EF	EXHAUST FAN	
EJ	EXPANSION JOINT	
EL	ELEVATION	
ELECT	ELECTRICAL	
EMS	ENERGY MANAGEMENT SYSTEM	
ESP		
EWC	ELECTRIC WATER COOLER	
°F	DEGREES FAHRENHEIT	
FA	FACE AREA (COIL) / FREE AREA (LOUVER)	
FC	FLEXIBLE CONNECTION	
FD	FLOOR DRAIN	
FDC	FIRE DEPARTMENT CONNECTION	
FH	FIRE HYDRANT	
FHC	FIRE HOSE CABINET	
FHR	FIRE HOSE RACK	
FHV	FIRE HOSE VALVE	
	FULL LOAD AMPS	
	FLOUR	
FFD	FLINNEL FLOOR DRAIN	
FFE	FINISHED FLOOR ELEVATION	
FS	FLOOR SINK	
FT	FEET	
FURN	FURNISHED	
FV	FACE VELOCITY	
FVC	FIRE VALVE CABINET	
GAL	GALLON	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
HB	HUSE BIBB	
HU LLD		
l <sup>111<sup>-</sup></sup>		

MECI	MECHANICAL ABBREVIATIONS					
ABBREV.	DESCRIPTION					
HR	HOUR					
HTG	HEATING					
HYD	HYDRANT					
HZ	HERTZ					
ID	INSIDE DIAMETER					
IE	INVERT ELEVATION					
IN	INCHES					
INST	INSTALLED					
INV	INVERT					
ISP	INTERNAL STATIC PRESSURE					
IW	INDIRECT WASTE					
KW	KILOWATT					
LAT	LEAVING AIR TEMPERATURE					
LAV	LAVATORY					
LBS/HR	POUNDS PER HOUR					
LDB	LEAVING DRY BULB TEMPERATURE					
LRA	LOCKED ROTOR AMPS					
LWB	LEAVING WET BULB TEMPERATURE					
MAV	MANUAL AIR VENT					
MAX	MAXIMUM					
МВН	1000 BRITISH THERMAL UNITS PER HOUR					
MCA	MINIMUM CIRCUIT AMPACITY					
MECH	MECHANICAL					
MFR	MANUFACTURER					
MH	MANHOLE					
MIN	MINIMUM					
MISC	MISCELLANEOUS					
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)					
MOP	MAXIMUM OVER-CURRENT PROTECTION					
N.C.	NOISE CRITERIA					
NIC	NOT IN CONTRACT					
NC	NORMALLY CLOSED					
NO	NORMALLY OPEN					
NOM						
	OUTSIDE AIR					
OBD	OPPOSED BLADE DAMPER					
	OUTSIDE DIAMETER					
	OVERELOW ROOF SUMP					
0587	OUTSIDE SCREW AND YOKE					
PD	PRESSURE DROP (FEFT OF WATER)					
PRV	PRESSURE REDUCING VALVE					
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE					
PSIG	POUNDS PER SQUARE INCH – GAUGF					
PT	PRESSURE / TEMPERATURE PORT					
RA	RETURN AIR					
RH	RELATIVE HUMIDITY					
REQD	REQUIRED					
REL.A	RELIEF AIR					
RPM	REVOLUTIONS PER MINUTE					
RPZ	REDUCED PRESSURE ZONE					
RS	ROOF SUMP					
SA	SUPPLY AIR					
SH	SHOWER					
SP	STATIC PRESSURE					
SqFt / SF	SQUARE FOOT/SQUARE FEET					
SS	SERVICE SINK					
TC	TEMPERATURE CONTROL					
Т&Р	TEMPERATURE AND PRESSURE					
TSP	TOTAL STATIC PRESSURE					
TYP	TYPICAL					
UG	UNDERGROUND					
UH	UNIT HEATER					
UL	UNDERWRITERS LABORATORY					
UNO	UNLESS NOTED OTHERWISE					

Μ ABBF W8 W WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_ —-E \_\_\_\_X . \_\_\_\_\_ $\longrightarrow$ --\_\_\_\_\_K ——)*/* (0 0 \_\_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
-----------------------	------------

REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

ABBREV.  DESCRIPTION    ———————————————————  PIPE ELBOW UP    ———————————————  PIPE ELBOW DOWN    —————————————  PIPE TEE DOWN						
→ PIPE ELBOW DOWN PIPE TEE DOWN						
DIRECTION OF FLOW						
STRAINER						
ECCENTRIC REDUCER	ECCENTRIC REDUCER					
EXPANSION JOINT						
PIPE GUIDE	PIPE GUIDE					
PIPE CAP OR PLUG						
CIRCULATING PUMP						
CLOBE VALVE						
BALL VALVE						
BACKWATER VALVE						
ANGLE VALVE						
	NEFDI F VAI VF					
本 OUTSIDE SCREW AND YOKE VALVE (OS&Y)	OUTSIDE SCREW AND YOKE VALVE (OS&Y)					
	SOLENOID VALVE					
$\mathbb{X}$ Control valve (2-way / 3-way)	CONTROL VALVE (2-WAY / 3-WAY)					
CENTRIFUGAL FAN						
AUTOMATIC GAS SHUT-OFF VALVE						
OG						
□ □ □ FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)	EW)					
$\square = \frac{1}{2} \qquad \qquad$	EW)					
$\alpha$ IRAP (PLAN VIEW)      Image: Second state of the second state of t	EW) )N)					
$\propto$ IRAP (PLAN VIEW)      Image: Relation of the second state of the s	EW) )N)					
	EW) DN)					
	EW) DN)					
IRAP (PLAN VIEW)      Imap (PLAN VIEW)	EW) DN)					
IRAP (PLAN VIEW)      Imap (PLAN VIEW)	EW) DN)					
C3    IRAP (PLAN VIEW)      IRAP (PLAN VIEW)      Image: Floor drain / funnel floor drain (Plan VIEW)      Image: Floor drain / funnel floor drain (Plan VIEW)      Image: Floor drain / funnel floor drain (Elevation)      Image: Floor drain (In floor)      Image: Floor drain out	EW)) DN)					
IRAP (PLAN VIEW)      Imap (Plan VIEW)	EW)) DN)					
IRAP (PLAN VIEW)      Imap (Plan VIEW)	EW)) DN)					
IRAP (PLAN VIEW)      Imap (PLAN VIEW)      Imap (PLAN VIEW)      FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)      Imap (PLAN VIEW)      <	EW))					
$\square$ IRAP (PLAN VIEW) $\square$ $\blacksquare$ FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW) $\neg$ $\square$ <t< th=""><th>EW)</th></t<>	EW)					
$CC$ IRAP (PLAN VIEW)Imap (PLAN VIEW)FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW) $rac{1}{\sqrt{2}}$ FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATIOn of the second dependence of	EW)					
$\square$ IRAP (PLAN VIEW) $\square$ FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VI $\neg$ $\neg$ $\neg$ $\neg$ $\neg$ $\square$ $\neg$ $\square$ $\neg$ $\square$ $\neg$ $\square$ <t< th=""><th>EW)</th></t<>	EW)					
$\infty$ IRAP (PLAN VIEW) $\square$ FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW) $\neg \bigcirc$ FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATIOn $\neg \bigcirc$ ROOF SUMP $\neg \bigcirc$ CLEAN OUT (IN FLOOR) $\angle \land \bigcirc$ CLEAN OUT (IN LINE) $\neg   wco$ CLEAN OUT (WALL) $\blacksquare FP$ BACKFLOW PREVENTER $\lor \frown \blacksquare \multimap$ WATER METER ASSEMBLY $\rightarrow$ HOSE BIBB, WALL HYDRANT $\sqcap \frown \blacksquare$ DIRECTION OF PIPE PITCH $\bigcirc$ SPRINKLER HEAD (UPRIGHT) $\lhd$ SPRINKLER HEAD (SIDEWALL) $\neg FS$ FLOW SWITCH $\checkmark$ SIAMESE CONNECTION (WALL MOUNTED) $\leftarrow \Box$ FIRE HYDRANT	EW)) DN)					
CCIRAP (PLAN VIEW)Image: Floor drain / funnel floor drain (PLAN VIImage: Floor drain / funnel floor drain (PLAN VIImage: Floor drain / funnel floor drain (Elevation)Image: Floor drain out (In floor)Image: Floor drain out (In floor)	EW)) )N)					
$\infty$ IRAP (PLAN VIEW)Image: Floor drain / funnel floor drain (PLAN VI $\sqrt{-\sqrt{3}}$ Floor drain / funnel floor drain (Elevation) $\sqrt{-\sqrt{3}}$ Floor drain / funnel floor drain (Elevation) $\sqrt{-\sqrt{3}}$ Roof SUMP $-\infty$ coCLEAN OUT (IN FLOOR) $\sqrt{-00}$ CLEAN OUT (IN LINE) $-1$ wcoCLEAN OUT (WALL)Image: Backflow preventer $-1$ water meter assembly $-+$ Hose BIBB, Wall Hydrant $$ $\infty$ SPRINKLER HEAD (UPRIGHT) $\triangleleft$ SPRINKLER HEAD (SIDEWALL) $$ $$ SIAMESE CONNECTION (YARD) $$ $\sim$ FLOW MEASURING DEVICE $\overrightarrow{A}$ Bal ANCING VALVE	EW)) )N)					
CG→    TRAP (PLAN VIEW)      Image: Floor drain / funnel floor drain (PLAN VIEW)      Image: Floor drain / funnel floor drain (PLAN VIEW)      Image: Floor drain / funnel floor drain (Elevation)      Image: Floor drain (In floor)      Image: Flow	EW)) N)					
○    IRAP (PLAN VIEW)      ○    FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VI	EW)					

MECHANICAL SYMBOLS					
ABBREV.	DESCRIPTION				
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)				
	RECTANGULAR TAKE-OFF (DOUBLE LINE)				
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)				
	ROUND TAKE-OFF (DOUBLE LINE)				
	SPIN-IN FITTING (WITH VOLUME DAMPER)				
	ELBOW (WITH TURNING VANES)				
	RADIUS RECTANGULAR ELBOW				
	RADIUS ROUND ELBOW				
	RECTANGULAR ELBOW UP				
	ROUND ELBOW UP				
	RECTANGULAR ELBOW DOWN				
	ROUND ELBOW DOWN				
	CONCENTRIC TRANSITION (DOUBLE LINE)				
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)				
	ECCENTRIC TRANSITION (DOUBLE LINE)				
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)				
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)				
ς <u>ι</u> _Γ_ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)				
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)				
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)				
	FLEXIBLE CONNECTION				
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER				
,−⊋	SUPPLY DIFFUSER				
	LINEAR SLOT DIFFUSER				
$\leftarrow$	RETURN OR EXHAUST GRILLE				
<b></b>	TRANSFER GRILLE				
	CROSS SECTION OF SUPPLY AIR DUCT				
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT				
	EXISTING FIRE DAMPER (HORIZONTAL)				
	EXISTING				
	FIRE DAMPER (VERTICAL) NEW				
<u> </u>	EXISTING SMOKE DAMPER				
	NEW				
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)				
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER				
	NEW (HORIZONTAL)				
	VOLUME DAMPER (MANUALLY ADJUSTABLE)				
M	MOTORIZED DAMPER				
SD T	SMOKE DETECTOR				
<u>(C02</u> )	CO2 SENSOR				
(T)	THERMOSTAT OR TEMPERATURE SENSOR				
H	HUMIDISTAT OR HUMIDITY SENSOR				
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW				

PIPING LEGEND			
ABBREV.	DESCRIPTION		
CA	COMPRESSED AIR PIPING		
CD	CONDENSATE DRAIN PIPING		
DT	DRAIN TILE		
——F	FIRE PROTECTION PIPING		
FOR	FUEL OIL RETURN PIPING		
F0S	FUEL OIL SUPPLY PIPING		
G	NATURAL GAS PIPING		
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING		
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING		
CW	DOMESTIC COLD WATER PIPING		
——NPCW——	NON POTABLE COLD WATER PIPING		
TW	TEMPERED WATER PIPING		
——HW——	DOMESTIC HOT WATER PIPING		
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE		
HWR	DOMESTIC HOT WATER RETURN PIPING		
SAN	SANITARY WASTE PIPING		
PSAN	PUMPED SANITARY PIPING		
V	VENT PIPING		
ST	STORM SEWER PIPING		
PST	PUMPED STORM PIPING		
RC	RAIN CONDUCTOR PIPING		
ORC	OVERFLOW RAIN CONDUCTOR PIPING		
CHWR	CHILLED WATER RETURN PIPING		
CHWS	CHILLED WATER SUPPLY PIPING		
CWR	CONDENSER WATER RETURN PIPING		
CWS	CONDENSER WATER SUPPLY PIPING		
HHWR	HEATING HOT WATER RETURN PIPING		
HHWS	HEATING HOT WATER SUPPLY PIPING		
	HEAT PUMP LOOP RETURN PIPING		
	HEAT PUMP LOOP SUPPLY PIPING		
	REFRIGERANT LIQUID PIPING		
—-кs——	REFRIGERANT SUCTION PIPING		
	CEO HEAT EVOLUTION		
	GEO HEAT EXCHANCE SUDDLY		
NTS	STEAM DIDING		
HPS			
	I OW PRESSURE STEAM PIPING		
CR	STEAM CONDENSATE RETURN PIPING		
	PUMPED STEAM CONDENSATE RETURN PIPING		
I PC	LOW PRESSURE CONDENSATE PIPING		
HPC	HIGH PRESSURE CONDENSATE PIPING		
MA	MEDICAL AIR PIPING		
N	NITROGEN GAS PIPING		
02	OXYGEN GAS PIPING		
	VACUUM PIPING		

APPLICABLE CODES AND REGULATIONS			
YEAR	CODE		
2021	MICHIGAN BUILDING CODE		
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS		
2021	MICHIGAN PLUMBING CODE		
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES		
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)		

	DRAWING INDEX					
SHT NO		DESCRIPTION				
M0.00	MECH	ANICAL GENERAL INFORMATION				
M1.10	MECH	ANICAL PLAN				
		DRAWING NOTATION				
SYMB	OL	DESCRIPTION				
1	$\rangle$	NEW WORK KEY NOTE NO. 1				
$\sum_{1}$	7	DEMOLITION KEY NOTE NO. 1				
<u>EF-</u>	<u>·1</u>	EQUIPMENT TAG				
S-1 10x1 100-	0 -2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10x10$ CFM = $100$ (TYPICAL FOR 2) $T = TRANSFER$				
EXISTING DEVICES OR EQUIPMENT						
_	NEW OR MODIFIED DEVICES OR EQUIPMENT					
Y / / / S EXISTING SYSTEM COMPONENT TO BE REMOVE						
POINT OF NEW CONNECTION						
SHEET M5.2 ON WHICH SECTION DRAWN						
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)						
C		YSTEM RISER S: SANITARY ESIGNATION D: DOMESTIC WATER H: HVAC PIPING SP: STAIRWELL PRESSURIZATION V: VENT - RISER NUMBER E: EXHAUST				

ISSUE DATE	ISSUED FOR	
05/08/2025	BIDS	
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DRAWN	RFB	
CHECKED	DGN	
APPROVED		

KEY PLAN

![](_page_272_Picture_12.jpeg)

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![](_page_272_Picture_14.jpeg)

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## Anchor Bay Schools Light House Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER

![](_page_272_Picture_20.jpeg)

SHEET NUMBER

M0.00

TAG	BARRIER FREE
EWC-1	Y
NOTES:	

![](_page_273_Picture_4.jpeg)

![](_page_273_Picture_5.jpeg)

## PLUMBING FIXTURES/SPECIALTIES SCHEDULE

ITEM	PIPE CONNECTION SIZES			ES	MANUFACTURER &	
	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.

EEL HINGED	
FILTERED).	

### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

1. REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES. KEY PLAN

ISSUE DATE ISSUED FOR 05/08/2025 BIDS . --. DRAWN RFB CHECKED DGN APPROVED

![](_page_273_Picture_35.jpeg)

## FRENCH

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![](_page_273_Picture_38.jpeg)

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## Anchor Bay Schools Light House Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET MECHANICAL PLAN

![](_page_273_Picture_43.jpeg)

 $\langle \# \rangle$ 

•	1/2"	1"	
	ACCURATE WHEN	PRINTED TO SCALE	

2025-019 SHEET NUMBER

M1.10

PROJECT NUMBER

COPPER FEEDER SCHEDULE									
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND	
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C	
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C	
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C	
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C	
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C	
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C	
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C	
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C	
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C	
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C	
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C	
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C	
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C	
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C	
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C	
			(150)	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C	
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C	
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C	
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C	
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C	
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C	
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C	
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C	
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C	
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C	
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C	
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C	
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C	
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C	
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C	
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C	
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C	
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C	
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C	
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C	
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C	

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G

![](_page_274_Figure_6.jpeg)

#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT

	POWER SYMBOL LIST						
SYMBOL	DESCRIPTION						
•	CONDUIT DOWN						
0	CONDUIT UP						
4	DISCONNECT SWITCH - NON FUSED						
L	DISCONNECT SWITCH - FUSED						
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER						
	ELECTRICAL PANEL						
$\bullet$	GROUNDING ROD						
Ē	GROUND						
<del></del>	GROUNDING BAR						
J	JUNCTION BOX						
Μ	METER						
$\mathcal{N}$	MOTOR – SINGLE PHASE						
$\mathbf{V}$	MOTOR – THREE PHASE						
\$м	MOTOR RATED SWITCH						
φ	POWER RECEPTACLE – SIMPLEX TYPE						
φ	POWER RECEPTACLE – DUPLEX TYPE						
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER						
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE						
+	POWER RECEPTACLE – QUADRUPLEX TYPE						
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE						
PT	POWER RECEPTACLE – POKE THRU TYPE						
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE						
TC TIME CLOCK							
Т	TRANSFORMER						
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS						

ALL DEVICE RATIN AND SCHEDULES. NGS/SIZES SHALL BE COORDINATED WITH PLANS

FIRE ALARM SYMBOL LIST									
SYMBOL	DESCRIPTION								
FA	AUDIBLE DEVICE/WALL MOUNTED								
F	VISUAL DEVICE/WALL MOUNTED								
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED								
F	AUDIBLE DEVICE/CEILING MOUNTED								
Ē	VISUAL DEVICE/CEILING MOUNTED								
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED								
¢\$	CO ALARM/SMOKE DETECTOR								
Ś	SMOKE DETECTOR								
Ô	CO ALARM								
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR								
H	HEAT DETECTOR								
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET								
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)								
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)								
F	MANUAL PULL STATION								
FS	FLOW SWITCH								
TS	TAMPER SWITCH								
FAA	FIRE ALARM ANNUNCIATOR PANEL								
FACP	FIRE ALARM CONTROL PANEL								
1/0	INPUT/OUTPUT CONTROL MODULE								
NOTES: 1. DRAWINGS	NOTES: DRAWINGS INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE DROVIDED BY FIRE ALARMA								

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELECTRICAL ABBREVIATIONS								
ABBREV.	DESCRIPTION							
AFF	ABOVE FINISHED FLOOR							
A	AMPERE							
AF	AMPERE FUSE/AMPERE FRAME							
AWG	AMERICAN WIRE GAUGE							
AT	AMPERE TRIP							
ATS	AUTOMATIC TRANSFER SWITCH							
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)							
С	CONDUIT OR CEILING MOUNTED							
СВ	CIRCUIT BREAKER							
CL	CONTROL LOAD							
CU	COPPER							
CT	CURRENT TRANSFORMER							
DIA	DIAMETER							
DISC	DISCONNECT							
EMT	ELECTRICAL METALLIC TUBING							
EWC	ELECTRIC WATER COOLER							
EPO	EMERGENCY POWER OFF							
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK							
FA								
F LA	FUSE							
G / GRD								
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER							
НОА	HAND-OFF-AUTO							
HP	HORSEPOWER							
IG	ISOLATED GROUND							
KV	KILOVOLT							
KVA	KILOVOLT AMPERE							
KW	KILOWATT							
KWH	KILOWATT HOUR							
LP	LIGHTING PANEL							
MCB	MAIN CIRCUIT BREAKER							
MDP	MAIN DISTRIBUTION PANEL							
MLO	MAIN LUG ONLY							
MAX	MAXIMUM							
MIN								
	NATIONAL ELECTRICAL MANUEACTURERS ASSOC							
	NATIONAL ELECTRICAL MANUFACTORERS ASSOC.							
NF								
NC	NORMALLY CLOSED							
NO	NORMALLY OPEN							
NIC	NOT IN CONTRACT							
PH. OR Ø	PHASE							
Р	POLE							
PF	POWER FACTOR							
PVC	POLYVINYL CHLORIDE (PLASTIC)							
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT							
(RR)	REMOVE AND REINSTALL							
RMC	RIGID METALLIC CONDUIT							
RP	RECEPTACLE PANEL							
TBB	TELEPHONE BACKBOARD							
TYP.								
UC								
UL								
UPS								
028	UNIVERSAL SERIAL BUS							
ν \/Δ	VOLT AMPERE							
W	WATT							
WG	WIRE GUARD							
WP	WEATHERPROOF							
XFMR	TRANSFORMER							

#### DRAWING INDEX

DESCRIPTION

SHT NO

00.0	ELECTRICAL GENERAL INFORMATION
1.10	ELECTRICAL PLAN

DRAWING NOTATION									
SYMBOL	DESCRIPTION								
L1	LIGHTING FIXTURE TAG								
	CONSTRUCTION KEY NOTE NUMBER 1								
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1								
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)								
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)								
QUIPMENT	EQUIPMENT TAG								
	EXISTING DEVICES OR EQUIPMENT								
	NEW OR MODIFIED DEVICES OR EQUIPMENT								
	NEW OR MODIFIED UNDERGROUND WIRING								
<del></del>	EXISTING SYSTEM COMPONENT TO BE REMOVED								
•	POINT OF NEW CONNECTION								
	SECTION NUMBER 4								
	4								

E5.2								
SHEET E5.2 ON WHICH SECTION IS DRAWN								
SECTION NO. 6								
<u>SECTION</u>								
E5.2 SCALE: $1/4'' = 1' - 0''$								
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)								
LIGHTING CONTROL TAG								
LIGHTING CONTROL								
ZIA DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)								
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.								

APPLICABLE CODES AND REGULATIONS							
ſEAR	CODE						
2021	MICHIGAN BUILDING CODE						
2015	MICHIGAN ENERGY CODE						
2015	MICHIGAN RESIDENTIAL CODE						
2015	MICHIGAN REHABILITATION CODE						
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8						
2023	NATIONAL ELECTRICAL CODE (NFPA 70)						
2013	NFPA 20						
2013	NFPA 72						
2013	NFPA 101						
2013	NFPA 110						
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES						
985	DETROIT ELEVATOR CODE						

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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	-
DRAWN	JL
CHECKED	RWC
APPROVED	SET

![](_page_274_Picture_24.jpeg)

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![](_page_274_Picture_26.jpeg)

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# Anchor Bay Schools Light House Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

## PROJECT NUMBER

![](_page_274_Picture_32.jpeg)

SHEET NUMBER

E0.00

![](_page_275_Picture_0.jpeg)

Panel Designation:			٨	<b>Nain</b> :	:10	0A N	1LO	P-P Voltage: 208								
Panel Location:					Bussing: 225A P-N									Voltage: 120		
Fed From:		Ground Bus: STANDARD									Phase	3				
Feeder Size:											Wire	Δ				
					Noutral: 1007							Min SC Interrupting Dating: 10,000				
	Light	Recent	Cont								nonC	Cont	Recent	Light		
Remarks	Load	Load	Load	Load	Prot	Prot CKT A B C CKT Prot				Load	Load	Load	Load	Remarks		
(E) STUDENT STATION - A110		1000			20	1	X		2	60	2000				(F) KIIN - A106	
(E) STUDENT STATION - A109		1000			20	3	X		4		2000				(	
(E) STUDENT STATION - A108		1000			20	5		X	6	20			200		(E) KILN FAN RECEPT - A106	
(E) STUDENT STATION - A105		1000			20	7	x		8	20	1150				NEW GFCI CB - (2) WATER COOLERS	
(E) STUDENT STATION - A102		1000			20	9	X		10	20					SPARE	
(E) STUDENT STATION - A135		1000			20	11		X	12	20					SPARE	
(E) STUDENT STATION - A134		1000			20	13	X		14	20					SPARE	
(E) STUDENT STATION - A132		1000			20	15	X	Ľ.	16	20					SPARE	
(E) RECEPT - A127		500			20	17		X	18	20					SPARE	
SPARE					20	19	X		20	20					SPARE	
SPARE					20	21	X		22	20					SPARE	
SPARE					20	23		X	24	20					SPARE	
SPARE					20	25	x		26	20					SPARE	
SPARE					20	27	X		28	20					SPARE	
SPARE					20	29		X	30	20					SPARE	
SPARE					20	31	x		32	20					SPARE	
SPARE					20	33	X	:	34	20					SPARE	
SPARE					20	35		X	36	20					SPARE	
SPARE					20	37	x		38	20					SPARE	
SPARE					20	39	X		40	20					SPARE	
SPARE					20	41		X	42	20					SPARE	
								<u> </u>	•							
Land Datawin Kan		Connec	red Load	<b>T</b> .1.1		I	Jem	and			<u>a.</u>	Demand			4	
Load Description							Fac	tor			ØA	<u> </u>			4	
Lighting or Continous Lodd (Volt-Amps)	0	0	0	0		1.00	∠. ا \	20 . 10	<u>() ( )</u>		0	0	0	0		
180VA Receptacie Loda (Volt-Amps)	3000	3000	2/00	8/00		1.00					3000	3000	2/00	8/00	Receptacie Demana Pactor per Afficie	
	Am	ount ove	r IUkVA	0	0.50 (> 10kVA)		0	0	0	0	220.44 of the National Electrical Code.					
Continuous Load (Volt-Amps)	0	0	0	0			1.2	<u></u>			0	0	0	0	4	
Non-Continuous Load (Volt-Amps)	3150	2000	0	5150	1.00				3150	2000	0	5150	4			
lotal Load (kVA)	6.15	5.00	2.70	13.85	125% of Light/Cont and Recept				6.15	5.00	2.70	13.85	4			
Total Ampacity (Amps)	51.2	41.6	22.5	38.4	(<10kVA) load plus other load				51.2	41.6	22.5	38.4	4			
Minimum Feeder Sizing (Amps)	57.5	47.9	28.1	44.5	< I	< per NEC Article 215.2>						47.9	28.1	44.5		

![](_page_275_Picture_2.jpeg)

 $\mathbf{\widehat{SCALE:1/32"}} = 1'-0"$ 

## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- 3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### $\mathbb{A}$

#### DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

### **NEW POWER GENERAL NOTES**

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

#### NEW WORK KEYED NOTES $\langle \# \rangle$

- 1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.
- 2. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND NEW BRANCH CIRCUIT WIRING TO PANEL, AS INDICATED. ROUTING OF NEW 3/4" CONDUIT SHALL BE DETERMINED IN FIELD. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

KEY PLAN

![](_page_275_Picture_27.jpeg)

![](_page_275_Picture_28.jpeg)

# FRENCH

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![](_page_275_Picture_31.jpeg)

Strategic Energy Solutions<sup>®</sup> 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com (C) 2025 SES, INC. SES Project #23 0019 01 PROJECT

## Anchor Bay Schools Light House Elementary Plumbing Upgrades

Chesterfield Twp, Michigan

SHEET ELECTRICAL PLAN

![](_page_275_Picture_36.jpeg)

![](_page_275_Picture_37.jpeg)

SHEET NUMBER

E1.10

![](_page_275_Picture_38.jpeg)

![](_page_275_Picture_39.jpeg)

# ANCHOR BAY SCHOOL DISTRICT

# LOTTIE SCHMIDT ES PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURAL		MECHANICAL			
A0.01 A0.02	ARCHITECTURAL REFERENCE SHEET CODE PLAN	M0.00 M1.10	MECHANICAL GENERAL INFORMATION MECHANICAL PLAN	E0.0 E1.1	
A2.10	FLOOR PLAN				

![](_page_276_Picture_7.jpeg)

LECTRICAL

ELECTRICAL GENERAL INFORMATION ELECTRICAL PLAN

![](_page_276_Picture_10.jpeg)

![](_page_276_Picture_11.jpeg)

![](_page_276_Picture_12.jpeg)

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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT

![](_page_277_Figure_4.jpeg)

DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC

![](_page_277_Figure_31.jpeg)

![](_page_277_Figure_32.jpeg)

![](_page_277_Figure_33.jpeg)

![](_page_277_Figure_35.jpeg)

![](_page_277_Figure_36.jpeg)

![](_page_277_Figure_37.jpeg)

![](_page_277_Figure_39.jpeg)

![](_page_277_Figure_41.jpeg)

![](_page_277_Figure_43.jpeg)

![](_page_278_Figure_0.jpeg)

#### **BUILDING INFORMATION**

- 1. EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 340. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 55,728 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

LOTTIE ELEMENTARY

- 1) DESIGN CODES 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING) NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE
- 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
- DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
  A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_278_Picture_16.jpeg)

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#### PROJECT

Anchor Bay Schools Lottie Schmidt ES Plumbing Upgrades

New Baltimore, Michigan

SHEET CODE PLAN

PROJECT NUMBER 2025-019 SHEET NUMBER A0.02

![](_page_279_Figure_0.jpeg)

EXISTING CMU
COORDINATE S IN FIELD ELEC WATER COOLER/BOTTL FILLER - REFER MECH EXISTING WALL BASE

STAINLESS PLATE -COORDINATE SIZE IN FIELD ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH EXISTING WALL BASE

PROPOSED

![](_page_279_Picture_5.jpeg)

![](_page_279_Figure_6.jpeg)

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_279_Picture_8.jpeg)

#### PROJECT

Anchor Bay Schools Lottie Schmidt ES Plumbing Upgrades

New Baltimore, Michigan

SHEET FLOOR PLAN

![](_page_279_Picture_13.jpeg)

MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE	
AD	ACCESS DOOR	
AE	AIR EXTRACTOR	
AFF	ABOVE FINISHED FLOOR	
APD	AIR PRESSURE DROP	
ASR	AUTOMATIC SPRINKLER RISER	
BFP	BACKFLOW PREVENTER	
BHP	BRAKE HORSEPOWER	
BTU	BRITISH THERMAL LINIT	
BTUH	BRITISH THERMAL UNITS PER HOUR	
BWV	BACKWATER VALVE	
САР	CAPACITY	
CAV	CONSTANT AIR VOLUME	
CFH	CUBIC FEET PER HOUR	
CFM	CUBIC FEET PER MINUTE	
CIRC	CIRCULATING	
CLG	COOLING	
СО	CLEAN OUT	
CONT	CONTINUATION OR CONTINUED	
CONV	CONVECTOR	
CUH	CABINET UNIT HEATER	
CV	CONTROL VALVE	
DB	DRY BULB IEMPERATURE	
DEG		
DTC	DRAIN TILE CONNECTION	
DWH	DOMESTIC WATER HEATER	
(E)	EXISTING	
EA/EXH	EXHAUST AIR	
EAT	ENTERING AIR TEMPERATURE	
EDB	ENTERING DRY BULB TEMPERATURE	
EF	EXHAUST FAN	
EJ	EXPANSION JOINT	
EL	ELEVATION	
ELECT	ELECTRICAL	
EMS	ENERGY MANAGEMENT SYSTEM	
ESP		
EWC	ELECTRIC WATER COOLER	
°F	DEGREES FAHRENHEIT	
FA	FACE AREA (COIL) / FREE AREA (LOUVER)	
FC	FLEXIBLE CONNECTION	
FD	FLOOR DRAIN	
FDC	FIRE DEPARTMENT CONNECTION	
FH	FIRE HYDRANT	
FHC	FIRE HOSE CABINET	
FHR	FIRE HOSE RACK	
FHV	FIRE HOSE VALVE	
	FULL LOAD AMPS	
	FLOUR	
FFD	FLINNEL FLOOR DRAIN	
FFE	FINISHED FLOOR ELEVATION	
FS	FLOOR SINK	
FT	FEET	
FURN	FURNISHED	
FV	FACE VELOCITY	
FVC	FIRE VALVE CABINET	
GAL	GALLON	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
HB	HUSE BIBB	
HU Lup		
l <sup>111<sup>-</sup></sup>		

MECHANICAL ABBREVIATIONS			
ABBREV.	DESCRIPTION		
HR	HOUR		
HTG	HEATING		
HYD	HYDRANT		
HZ	HERTZ		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IN	INCHES		
INST	INSTALLED		
INV	INVERT		
ISP	INTERNAL STATIC PRESSURE		
IW	INDIRECT WASTE		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
LAV	LAVATORY		
LBS/HR	POUNDS PER HOUR		
LDB	LEAVING DRY BULB TEMPERATURE		
LRA	LOCKED ROTOR AMPS		
LWB	LEAVING WET BULB TEMPERATURE		
MAV	MANUAL AIR VENT		
MAX	MAXIMUM		
МВН	1000 BRITISH THERMAL UNITS PER HOUR		
MCA	MINIMUM CIRCUIT AMPACITY		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MH	MANHOLE		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)		
MOP	MAXIMUM OVER-CURRENT PROTECTION		
N.C.	NOISE CRITERIA		
NIC	NOT IN CONTRACT		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NOM			
	OUTSIDE AIR		
OBD	OPPOSED BLADE DAMPER		
	OUTSIDE DIAMETER		
	OVERELOW ROOF SUMP		
0587	OUTSIDE SCREW AND YOKE		
PD	PRESSURE DROP (FEFT OF WATER)		
PRV	PRESSURE REDUCING VALVE		
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
PSIG	POUNDS PER SQUARE INCH – GAUGF		
PT	PRESSURE / TEMPERATURE PORT		
RA	RETURN AIR		
RH	RELATIVE HUMIDITY		
REQD	REQUIRED		
REL.A	RELIEF AIR		
RPM	REVOLUTIONS PER MINUTE		
RPZ	REDUCED PRESSURE ZONE		
RS	ROOF SUMP		
SA	SUPPLY AIR		
SH	SHOWER		
SP	STATIC PRESSURE		
SqFt / SF	SQUARE FOOT/SQUARE FEET		
SS	SERVICE SINK		
TC	TEMPERATURE CONTROL		
Т&Р	TEMPERATURE AND PRESSURE		
TSP	TOTAL STATIC PRESSURE		
TYP	TYPICAL		
UG	UNDERGROUND		
UH	UNIT HEATER		
UL	UNDERWRITERS LABORATORY		
UNO	UNLESS NOTED OTHERWISE		

Μ ABBF W& WE WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_E \_\_\_\_X $\rightarrow$ \_\_\_\_ \_\_\_> --\_\_\_\_¤ \_\_\_\_/, CHO 6 \_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
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REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS			
ABBREV.	DESCRIPTION		
o	PIPE ELBOW UP		
	PIPE ELBOW DOWN		
<del></del>	PIPE TEE DOWN		
	DIRECTION OF FLOW		
	UNION		
	STRAINER		
	CONCENTRIC REDUCER		
	ECCENTRIC REDUCER		
	EXPANSION JOINT		
	FLEXIBLE CONNECTION		
	PIPE ANCHOR		
	PIPE GUIDE		
, M			
	GLUBE VALVE		
	BALL VALVE		
	BUTTERFLY VALVE		
<u>→</u>	BACKWATER VALVE		
<u>k</u>	ANGLE VALVE		
	CHECK VALVE (SWING)		
	CHECK VALVE (SPRING)		
I∕⊽I	PLUG VALVE		
	NEEDLE VALVE		
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)		
↓	PRESSURE REGULATING VALVE		
X	SOLENOID VALVE		
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)		
$\bigcirc$	CENTRIFUGAL FAN		
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE		
	TRAP (PLAN VIEW)		
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)		
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)		
Ô	ROOF SUMP		
——⊖ C0	CLEAN OUT (IN FLOOR)		
//co	CLEAN OUT (IN LINE)		
	CLEAN OUT (WALL)		
BFP	BACKFLOW PREVENTER		
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY		
+	HOSE BIBB, WALL HYDRANT		
	DIRECTION OF PIPE PITCH		
$\odot$	SPRINKLER HEAD (UPRIGHT)		
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)		
—FS	FLOW SWITCH		
<u> </u>	SIAMESE CONNECTION (YARD)		
, ,	SIAMESE CONNECTION (WALL MOUNTED)		
× H	FIRE HYDRANT		
	FLOW MEASURING DEVICE		
<u>≫</u> ⊼	BALANCING VAI VF		
	COMBINATION FLOW MEASURING AND RALANCING DEVICE		
<u>ド</u> 「天MAV			
¥			

MECHANICAL SYMBOLS			
ABBREV.	DESCRIPTION		
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)		
	RECTANGULAR TAKE-OFF (DOUBLE LINE)		
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)		
	ROUND TAKE-OFF (DOUBLE LINE)		
	SPIN-IN FITTING (WITH VOLUME DAMPER)		
	ELBOW (WITH TURNING VANES)		
	RADIUS RECTANGULAR ELBOW		
	RADIUS ROUND ELBOW		
	RECTANGULAR ELBOW UP		
	ROUND ELBOW UP		
	RECTANGULAR ELBOW DOWN		
	ROUND ELBOW DOWN		
	CONCENTRIC TRANSITION (DOUBLE LINE)		
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)		
	ECCENTRIC TRANSITION (DOUBLE LINE)		
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)		
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)		
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)		
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)		
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)		
	FLEXIBLE CONNECTION		
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER		
,−⊋	SUPPLY DIFFUSER		
	LINEAR SLOT DIFFUSER		
$\leftarrow$	RETURN OR EXHAUST GRILLE		
<b></b>	TRANSFER GRILLE		
	CROSS SECTION OF SUPPLY AIR DUCT		
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT		
	EXISTING FIRE DAMPER (HORIZONTAL)		
	EXISTING		
	FIRE DAMPER (VERTICAL) NEW		
<u> </u>	EXISTING SMOKE DAMPER		
	NEW		
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER		
	NEW (HORIZONTAL)		
	VOLUME DAMPER (MANUALLY ADJUSTABLE)		
M	MOTORIZED DAMPER		
SD T	SMOKE DETECTOR		
<u>(C02</u> )	CO2 SENSOR		
(T)	THERMOSTAT OR TEMPERATURE SENSOR		
H	HUMIDISTAT OR HUMIDITY SENSOR		
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW		

	PIPING LEGEND
ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
——F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
F0S	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
——NPCW——	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
——HW——	DOMESTIC HOT WATER PIPING
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
CHWR	CHILLED WATER RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
	HEAT PUMP LOOP RETURN PIPING
	HEAT PUMP LOOP SUPPLY PIPING
	REFRIGERANT LIQUID PIPING
—-кs——	REFRIGERANT SUCTION PIPING
	CEO HEAT EVOLUTION
	GEO HEAT EXCHANCE SUDDLY
NTS	STEAM DIDING
HPS	
	I OW PRESSURE STEAM PIPING
CR	STEAM CONDENSATE RETURN PIPING
	PUMPED STEAM CONDENSATE RETURN PIPING
I PC	LOW PRESSURE CONDENSATE PIPING
HPC	HIGH PRESSURE CONDENSATE PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN GAS PIPING
02	OXYGEN GAS PIPING
	VACUUM PIPING

	APPLICABLE CODES AND REGULATIONS
YEAR	CODE
2021	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2021	MICHIGAN PLUMBING CODE
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)

DRAWING INDEX								
SHT NO		DESCRIPTION						
M0.00	MECH	ECHANICAL GENERAL INFORMATION						
M1.10	M1.10 MECHANICAL PLAN							
	[	DRAWING NOTATION						
SYMB	OL	DESCRIPTION						
(1	$\rangle$	NEW WORK KEY NOTE NO. 1						
$\int_{1}$	7	DEMOLITION KEY NOTE NO. 1						
<u>EF–</u>	<u>·1</u>	EQUIPMENT TAG						
S-1 10x1 100-	0 •2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10 \times 10$ CFM = $100$ (TYPICAL FOR 2) $S = SUPPLY$ $R = RETURNE = EXHAUSTT = TRANSFER$						
	EXISTING DEVICES OR EQUIPMENT							
	NEW OR MODIFIED DEVICES OR EQUIPMENT							
<del>\ / /</del>	SY / / / SYSTEM COMPONENT TO BE REMOVED							
POINT OF NEW CONNECTION								
SHEET M5.2 ON WHICH SECTION DRAWN								
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)								
SYSTEM RISER DESIGNATION X-# RISER NUMBER SYSTEM RISER SHITARY DESIGNATION D: DOMESTIC WATER H: HVAC PIPING SP: STAIRWELL PRESSURIZATION V: VENT E: EXHAUST								

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
L	-
l	
L	-
DRAWN	RFB
CHECKED	DGN
APPROVED	

KEY PLAN

![](_page_280_Picture_12.jpeg)

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_280_Picture_14.jpeg)

**Strategic Energy Solutions**® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. SES Project #23 0019 01 PROJECT

Anchor Bay Schools Lottie Schmidt ES Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER

![](_page_280_Picture_20.jpeg)

SHEET NUMBER

M0.00

TAG	BARRIER FREE
EWC-1	Y
NOTES:	

![](_page_281_Picture_3.jpeg)

![](_page_281_Picture_4.jpeg)

## PLUMBING FIXTURES/SPECIALTIES SCHEDULE

ITEM	PIPE CONNECTION SIZES		MANUFACTURER &			
	WASTE	VENT CW HW MODEL N		MODEL NO.	ACCESSORIES	
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1. 3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.

![](_page_281_Figure_8.jpeg)

TEEL HINGED	
(FII TERED)	

### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES. BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

### **KEYED NOTES**

 REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN

![](_page_281_Picture_33.jpeg)

![](_page_281_Picture_34.jpeg)

# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

![](_page_281_Picture_37.jpeg)

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Anchor Bay Schools Lottie Schmidt ES Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL PLAN

![](_page_281_Picture_42.jpeg)

![](_page_281_Picture_43.jpeg)

![](_page_281_Picture_44.jpeg)

![](_page_281_Picture_45.jpeg)

SHEET NUMBER M1.10

				COPI	PER FEEDER SCHEDULE			
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	30N	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G

![](_page_282_Figure_6.jpeg)

#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

POWER SYMBOL LIST				
SYMBOL	DESCRIPTION			
•	CONDUIT DOWN			
0	CONDUIT UP			
4	DISCONNECT SWITCH - NON FUSED			
L	DISCONNECT SWITCH - FUSED			
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER			
	ELECTRICAL PANEL			
$\bullet$	GROUNDING ROD			
Ē	GROUND			
<del></del>	GROUNDING BAR			
J	JUNCTION BOX			
Μ	METER			
$\mathcal{N}$	MOTOR – SINGLE PHASE			
$\mathbf{V}$	MOTOR – THREE PHASE			
\$м	MOTOR RATED SWITCH			
φ	POWER RECEPTACLE – SIMPLEX TYPE			
φ	POWER RECEPTACLE – DUPLEX TYPE			
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER			
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE			
+	POWER RECEPTACLE – QUADRUPLEX TYPE			
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE			
PT	POWER RECEPTACLE – POKE THRU TYPE			
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE			
TC	TIME CLOCK			
Т	TRANSFORMER			
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS			

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST					
SYMBOL	DESCRIPTION				
F	AUDIBLE DEVICE/WALL MOUNTED				
F	VISUAL DEVICE/WALL MOUNTED				
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED				
F	AUDIBLE DEVICE/CEILING MOUNTED				
Ē	VISUAL DEVICE/CEILING MOUNTED				
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED				
¢\$	CO ALARM/SMOKE DETECTOR				
Ś	SMOKE DETECTOR				
Ô	CO ALARM				
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR				
H	HEAT DETECTOR				
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET				
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)				
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)				
F	MANUAL PULL STATION				
FS	FLOW SWITCH				
TS	TAMPER SWITCH				
FAA	FIRE ALARM ANNUNCIATOR PANEL				
FACP	FIRE ALARM CONTROL PANEL				
1/0	INPUT/OUTPUT CONTROL MODULE				
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND				

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELEC	CTRICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
۵FF	ABOVE FINISHED FLOOR
Δ	
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
С	CONDUIT OR CEILING MOUNTED
СВ	CIRCUIT BREAKER
CL	CONTROL LOAD
CU	COPPER
СТ	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	
	LIGHTING PANEL
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
PH. OR Ø	PHASE
Р	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
KMC	
τρρ	TELEDHONE RACKDOADD
TYP	
	UNDER COUNTER
UI	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT AMPERE
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

#### DRAWING INDEX

SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
E1.10	ELECTRICAL PLAN

DRAWING NOTATION							
SYMBOL	DESCRIPTION						
L1	LIGHTING FIXTURE TAG						
$\langle 1 \rangle$	CONSTRUCTION KEY NOTE NUMBER 1						
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1						
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)						
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)						
EQUIPMENT	EQUIPMENT TAG						
	EXISTING DEVICES OR EQUIPMENT						
	NEW OR MODIFIED DEVICES OR EQUIPMENT						
	NEW OR MODIFIED UNDERGROUND WIRING						
	EXISTING SYSTEM COMPONENT TO BE REMOVED						
•	POINT OF NEW CONNECTION						
	SECTION NUMBER 4						
	4 E5.2						

SHEET E5.2 ON WHICH SECTION IS DRAWN					
SECTION NO. 6					
6 SECTION					
E5.2 SCALE: $1/4 = 1 - 0$					
- SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)					
LIGHTING CONTROL TAG					
LIGHTING CONTROL					
DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)					
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL					
DEVICES REQUIRED IN THE AREA.					

APPLICABLE CODES AND REGULATIONS						
YEAR	CODE					
2021	MICHIGAN BUILDING CODE					
2015	MICHIGAN ENERGY CODE					
2015	MICHIGAN RESIDENTIAL CODE					
2015	MICHIGAN REHABILITATION CODE					
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8					
2023	NATIONAL ELECTRICAL CODE (NFPA 70)					
2013	NFPA 20					
2013	NFPA 72					
2013	NFPA 101					
2013	NFPA 110					
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES					
985	DETROIT ELEVATOR CODE					

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ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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DRAWN	JL
CHECKED	RWC
APPROVED	SET

![](_page_282_Picture_24.jpeg)

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![](_page_282_Picture_26.jpeg)

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# Anchor Bay Schools Lottie Schmidt ES Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER

![](_page_282_Picture_32.jpeg)

E0.00

![](_page_282_Picture_34.jpeg)

Panel Designation Panel Location	: <b>(E)</b>	RP-C	P			Bu	Mair Issing	n: 10 g: 22	00A N 25A	ЛСВ			P-P \ P-N \	/oltage: /oltage:	208
Fed From	: EXISTIN	G			G	roun	d Bu	s: ST	TAND	ARD				Phase	3
Feeder Size		G				Mou	ntinc	1. 21		CE				Wire	
	• L/15 111	0								м	Min SC Interrupting Pating: 10,000				
	light	Recent	Cont	nonC							nonC		Recent	light	
Remarks	Load	Load	Load	Load	Prot	СКТ		3 C	Скт	Prot	Load	Load	Load	Load	Remarks
(E) NORTH/WEST COMPUTER PLUGS		1000			20	1	X	Τ	2	20			1000		(E) EAST/CENTER COMPUTER PLUGS
(E) WEST/CENTER COMPUTER PLUGS		1000			20	3		x	4	20			1000		(E) EAST/CENTER COMPUTER PLUGS
(E) SOUTH/WEST COMPUTER PLUGS		1000			20	5		X	6	20			1000		(E) EAST/SOUTH COMPUTER PLUGS
(E) NORTH/EAST COMPUTER PLUGS		1000			20	7	X		8	20			1000		(E) WEST/SOUTH COMPUTER PLUGS
(E) NORTH/EAST COMPUTER PLUGS		1000			20	9		x	10	20			1000		(E) COMPUTERS LIBRARY
(E) EAST CENTER COMPUTER PLUGS		1000			20	11		X	12	20			1000		(E) COMPUTERS LIBRARY
(E) COMPUTERS LIBRARY		1000			20	13	X		14	20			1000		(E) COMPUTERS LIBRARY
(E) COMPUTERS LIBRARY		1000			20	15		x	16	50	4000				
NEW GFCICB - WATER COOLER NORTH				575	20	17		X	18	1 30	4000				
NEW GFCICB - WATER COOLER SOUTH				575	20	19	X		20	20					SPARE
SPARE					20	21		x	22	20					SPARE
SPARE					20	23		X	24	20					SPARE
SPARE					20	25	X		26	20					SPARE
SPARE					20	27		x	28	20					SPARE
SPARE					20	29		X	30	20					SPARE
SPARE					20	31	X		32	20					SPARE
SPARE					20	33		x	34	20					SPARE
SPARE					20	35		X	36	20					SPARE
SPARE					20	37	x	╈	38					1000	
SPARE					20	39		x	40	15				1000	(E) SIGN
SPARE					20	41		X	42	1				1000	-
					1						1				7
		Connec	ted Load				Den	nanc	d			Demana	d Load		_
Load Description	ØA	ØB	ØC	Total			Fac	ctor			ØA	ØB	ØC	Total	=
Lighting or Continous Load (Volt-Amps)	1000	1000	1000	3000			.	25			1250	1250	1250	3750	
180VA Receptacle Load (Volt-Amps)	6000	5000	4000	15000		1.0	0 (Firs	st 10	)kVA)		4000	3333	2667	10000	Receptacle Demand Factor per Article
	An	nount ove	er 10kVA	5000		0.	50 (>	10k	(VA)		1000	833	667	2500	220.44 of the National Electrical Code.
Continuous Load (Volt-Amps)	0	0	0	0			1.	25			0	0	0	0	1
Non-Continuous Load (Volt-Amps)	575	4000	4575	9150			1.	00			575	4000	4575	9150	
Total Load (kVA)	7.58	10.00	9.58	27.15	125%	ofLig	ght/C	ont	and R	ecept	6.83	9.42	9.16	25.40	1
Total Ampacity (Amps)	63.1	83.3	79.7	75.4	(<10	kVA) l	load	plus	s othe	r load	56.8	78.4	76.3	70.5	
Minimum Feeder Sizing (Amps)	74.0	92.8	87.9	84.9	<	per N	EC A	rticl	e 215.	2>	67.8	88.0	84.4	80.0	

![](_page_283_Figure_1.jpeg)

![](_page_283_Picture_2.jpeg)

## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- 3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### $\mathbb{A}$

#### DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### **NEW POWER GENERAL NOTES**

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

#### NEW WORK KEYED NOTES $\langle \# \rangle$

- 1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.
- 2. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND NEW BRANCH CIRCUIT WIRING TO PANEL, AS INDICATED. ROUTING OF NEW 3/4" CONDUIT SHALL BE DETERMINED IN FIELD. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

KEY PLAN

![](_page_283_Picture_26.jpeg)

![](_page_283_Picture_27.jpeg)

# FRENCH

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![](_page_283_Picture_30.jpeg)

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## Anchor Bay Schools Lottie Schmidt ES Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL PLAN

![](_page_283_Picture_35.jpeg)

![](_page_283_Picture_36.jpeg)

![](_page_283_Picture_37.jpeg)

![](_page_283_Picture_38.jpeg)

# ANCHOR BAY SCHOOL DISTRICT

# MACDONALD ELEMENTARY PLUMBING UPGRADES CASCO TWP, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

AR	CHITECTURAL	ME		
A0.01 A0.02	ARCHITECTURAL REFERENCE SHEET CODE PLAN	M0.00 M1.10	MECHANICAL GENERAL INFORMATION MECHANICAL PLAN	E0.0 E1.1
A2.10	FLOOR PLAN			

![](_page_284_Picture_7.jpeg)

LECTRICAL

ELECTRICAL GENERAL INFORMATION ELECTRICAL PLAN

![](_page_284_Picture_10.jpeg)

![](_page_284_Picture_11.jpeg)

![](_page_284_Picture_12.jpeg)

© GOOGLE

![](_page_284_Picture_16.jpeg)

## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contras	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT

![](_page_285_Figure_4.jpeg)

DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC

![](_page_285_Figure_31.jpeg)

![](_page_285_Figure_32.jpeg)

![](_page_285_Figure_33.jpeg)

![](_page_285_Figure_35.jpeg)

![](_page_285_Figure_36.jpeg)

![](_page_285_Figure_37.jpeg)

![](_page_285_Figure_39.jpeg)

![](_page_285_Figure_41.jpeg)

![](_page_285_Figure_43.jpeg)

TACK BOARDS AND MARKER BOARDS

![](_page_286_Figure_0.jpeg)

![](_page_286_Figure_1.jpeg)

#### **BUILDING INFORMATION**

- 1. EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 49. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 57,402 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

- MACDONALD ELEMENTARY

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
	-
	-
	-
	-
	-
DRAWN	– КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_286_Picture_17.jpeg)

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377

#### PROJECT

Anchor Bay Schools MacDonald Elementary Plumbing Upgrades

Casco, Michigan

SHEET CODE PLAN

PROJECT NUMBER 2025-019 SHEET NUMBER A0.02

![](_page_287_Figure_0.jpeg)

![](_page_287_Figure_1.jpeg)

![](_page_287_Figure_2.jpeg)

![](_page_287_Picture_3.jpeg)

KEY PLAN

— EXISTING GLAZED CMU

- STAINLESS PLATE -COORDINATE SIZE IN FIELD - ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH — EXISTING GLAZED CMU

![](_page_287_Figure_7.jpeg)

- EXISTING GLAZED CMU

- STAINLESS PLATE -COORDINATE SIZE - ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH - EXISTING GLAZED CMU

PROPOSED

![](_page_287_Picture_11.jpeg)

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

![](_page_287_Picture_13.jpeg)

### PROJECT

Anchor Bay Schools MacDonald Elementary Plumbing Upgrades

Casco, Michigan

SHEET COMPOSITE FLOOR PLAN

PROJECT NUMBER 2025-019 SHEET NUMBER A2.10
MECI	CHANICAL ABBREVIATIONS						
ABBREV.	DESCRIPTION						
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE						
AD	ACCESS DOOR						
AE	AIR EXTRACTOR						
AFF	ABOVE FINISHED FLOOR						
APD	AIR PRESSURE DROP						
ASR	AUTOMATIC SPRINKLER RISER						
BFP	BACKFLOW PREVENTER						
BHP	BRAKE HORSEPOWER						
BTU	BRITISH THERMAL LINIT						
BTUH	BRITISH THERMAL UNITS PER HOUR						
BWV	BACKWATER VALVE						
САР	CAPACITY						
CAV	CONSTANT AIR VOLUME						
CFH	CUBIC FEET PER HOUR						
CFM	CUBIC FEET PER MINUTE						
CIRC	CIRCULATING						
CLG	COOLING						
СО	CLEAN OUT						
CONT	CONTINUATION OR CONTINUED						
CONV	CONVECTOR						
CUH	CABINET UNIT HEATER						
CV	CONTROL VALVE						
DB	DRY BULB IEMPERATURE						
DEG							
	DOWN						
DTC	DRAIN TILE CONNECTION						
DWH	DOMESTIC WATER HEATER						
(E)	EXISTING						
EA/EXH	EXHAUST AIR						
EAT	ENTERING AIR TEMPERATURE						
EDB	ENTERING DRY BULB TEMPERATURE						
EF	EXHAUST FAN						
EJ	EXPANSION JOINT						
EL	ELEVATION						
ELECT	ELECTRICAL						
EMS	ENERGY MANAGEMENT SYSTEM						
ESP							
EWC	ELECTRIC WATER COOLER						
°F	DEGREES FAHRENHEIT						
FA	FACE AREA (COIL) / FREE AREA (LOUVER)						
FC	FLEXIBLE CONNECTION						
FD	FLOOR DRAIN						
FDC	FIRE DEPARTMENT CONNECTION						
FH	FIRE HYDRANT						
FHC	FIRE HOSE CABINET						
FHR	FIRE HOSE RACK						
FHV	FIRE HOSE VALVE						
	FULL LOAD AMPS						
	FLOUR						
FFD	FLINNEL FLOOR DRAIN						
FFE	FINISHED FLOOR ELEVATION						
FS	FLOOR SINK						
FT	FEET						
FURN	FURNISHED						
FV	FACE VELOCITY						
FVC	FIRE VALVE CABINET						
GAL	GALLON						
GPH	GALLONS PER HOUR						
GPM	GALLONS PER MINUTE						
HB	HUSE BIBB						
HU LLD							
l <sup>111<sup>-</sup></sup>	HURSEPUWER						

MECI	MECHANICAL ABBREVIATIONS						
ABBREV.	DESCRIPTION						
HR	HOUR						
HTG	HEATING						
HYD	HYDRANT						
HZ	HERTZ						
ID	INSIDE DIAMETER						
IE	INVERT ELEVATION						
IN	INCHES						
INST	INSTALLED						
INV	INVERT						
ISP	INTERNAL STATIC PRESSURE						
IW	INDIRECT WASTE						
KW	KILOWATT						
LAT	LEAVING AIR TEMPERATURE						
LAV	LAVATORY						
LBS/HR	POUNDS PER HOUR						
LDB	LEAVING DRY BULB TEMPERATURE						
LRA	LOCKED ROTOR AMPS						
LWB	LEAVING WET BULB TEMPERATURE						
MAV	MANUAL AIR VENT						
MAX	MAXIMUM						
МВН	1000 BRITISH THERMAL UNITS PER HOUR						
MCA	MINIMUM CIRCUIT AMPACITY						
MECH	MECHANICAL						
MFR	MANUFACTURER						
MH	MANHOLE						
MIN	MINIMUM						
MISC	MISCELLANEOUS						
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)						
MOP	MAXIMUM OVER-CURRENT PROTECTION						
N.C.	NOISE CRITERIA						
NIC	NOT IN CONTRACT						
NC	NORMALLY CLOSED						
NO	NORMALLY OPEN						
NOM							
	OUTSIDE AIR						
OBD	OPPOSED BLADE DAMPER						
	OUTSIDE DIAMETER						
	OVERELOW ROOF SUMP						
0587	OUTSIDE SCREW AND YOKE						
PD	PRESSURE DROP (FEFT OF WATER)						
PRV	PRESSURE REDUCING VALVE						
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE						
PSIG	POUNDS PER SQUARE INCH – GAUGF						
PT	PRESSURE / TEMPERATURE PORT						
RA	RETURN AIR						
RH	RELATIVE HUMIDITY						
REQD	REQUIRED						
REL.A	RELIEF AIR						
RPM	REVOLUTIONS PER MINUTE						
RPZ	REDUCED PRESSURE ZONE						
RS	ROOF SUMP						
SA	SUPPLY AIR						
SH	SHOWER						
SP	STATIC PRESSURE						
SqFt / SF	SQUARE FOOT/SQUARE FEET						
SS	SERVICE SINK						
TC	TEMPERATURE CONTROL						
Т&Р	TEMPERATURE AND PRESSURE						
TSP	TOTAL STATIC PRESSURE						
TYP	TYPICAL						
UG	UNDERGROUND						
UH	UNIT HEATER						
UL	UNDERWRITERS LABORATORY						
UNO	UNLESS NOTED OTHERWISE						

Μ ABBF V W& WE WC WG WH

# ABB \_\_\_\_\_ ----------( ------( \_\_\_\_\_/*,* CHO 0 \_\_\_\_\_ н

IECHANICAL	ABBREVIATIONS
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REV.	DESCRIPTION					
R	URINAL					
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)					
ſR	VENT THRU ROOF					
V	WASTE					
٤V	WASTE AND VENT					
В	WET BULB TEMPERATURE					
C	WATER CLOSET					
G	WATER GAUGE					
Ή	WALL HYDRANT					

MECHANICAL PIPING SYMBOLS						
ABBREV.	DESCRIPTION					
o	PIPE ELBOW UP					
	PIPE ELBOW DOWN					
<del></del>	PIPE TEE DOWN					
	DIRECTION OF FLOW					
	UNION					
	STRAINER					
	CONCENTRIC REDUCER					
	ECCENTRIC REDUCER					
	EXPANSION JOINT					
	FLEXIBLE CONNECTION					
	PIPE ANCHOR					
	PIPE GUIDE					
	PIPE CAP OR PLUC					
, M						
	GLUBE VALVE					
	BALL VALVE					
	BUTTERFLY VALVE					
<u>→</u>	BACKWATER VALVE					
<u>k</u>	ANGLE VALVE					
	CHECK VALVE (SWING)					
	CHECK VALVE (SPRING)					
I∕⊽I	PLUG VALVE					
	NEEDLE VALVE					
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)					
↓	PRESSURE REGULATING VALVE					
X	SOLENOID VALVE					
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)					
$\bigcirc$	CENTRIFUGAL FAN					
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE					
	TRAP (PLAN VIEW)					
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)					
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)					
Ô	ROOF SUMP					
——⊖ C0	CLEAN OUT (IN FLOOR)					
//co	CLEAN OUT (IN LINE)					
	CLEAN OUT (WALL)					
BFP	BACKFLOW PREVENTER					
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY					
+	HOSE BIBB, WALL HYDRANT					
	DIRECTION OF PIPE PITCH					
$\odot$	SPRINKLER HEAD (UPRIGHT)					
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)					
—FS	FLOW SWITCH					
<u> </u>	SIAMESE CONNECTION (YARD)					
, ,	SIAMESE CONNECTION (WALL MOUNTED)					
<u>≫</u> ⊼	BALANCING VAI VF					
	COMBINATION FLOW MEASURING AND RALANCING DEVICE					
<u>ド</u> 「天MAV						
¥						

MECHANICAL SYMBOLS						
ABBREV.	DESCRIPTION					
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)					
	RECTANGULAR TAKE-OFF (DOUBLE LINE)					
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)					
	ROUND TAKE-OFF (DOUBLE LINE)					
	SPIN-IN FITTING (WITH VOLUME DAMPER)					
	ELBOW (WITH TURNING VANES)					
	RADIUS RECTANGULAR ELBOW					
	RADIUS ROUND ELBOW					
	RECTANGULAR ELBOW UP					
	ROUND ELBOW UP					
	RECTANGULAR ELBOW DOWN					
	ROUND ELBOW DOWN					
	CONCENTRIC TRANSITION (DOUBLE LINE)					
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)					
	ECCENTRIC TRANSITION (DOUBLE LINE)					
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)					
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)					
ς <u>ι</u> _Γ_ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)					
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)					
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)					
	FLEXIBLE CONNECTION					
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER					
,−⊋	SUPPLY DIFFUSER					
	LINEAR SLOT DIFFUSER					
$\leftarrow$	RETURN OR EXHAUST GRILLE					
<b></b>	TRANSFER GRILLE					
	CROSS SECTION OF SUPPLY AIR DUCT					
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT					
	EXISTING FIRE DAMPER (HORIZONTAL)					
	EXISTING					
	FIRE DAMPER (VERTICAL) NEW					
<u>م</u>	EXISTING SMOKE DAMPER					
	NEW					
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)					
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER					
	NEW (HORIZONTAL)					
	VOLUME DAMPER (MANUALLY ADJUSTABLE)					
M	MOTORIZED DAMPER					
SD T	SMOKE DETECTOR					
<u>(C02</u> )	CO2 SENSOR					
(T)	THERMOSTAT OR TEMPERATURE SENSOR					
H	HUMIDISTAT OR HUMIDITY SENSOR					
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW					

PIPING LEGEND								
ABBREV.	DESCRIPTION							
CA	COMPRESSED AIR PIPING							
CD	CONDENSATE DRAIN PIPING							
DT	DRAIN TILE							
——F	FIRE PROTECTION PIPING							
FOR	FUEL OIL RETURN PIPING							
F0S	FUEL OIL SUPPLY PIPING							
G	NATURAL GAS PIPING							
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING							
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING							
CW	DOMESTIC COLD WATER PIPING							
——NPCW——	NON POTABLE COLD WATER PIPING							
TW	TEMPERED WATER PIPING							
——HW——	DOMESTIC HOT WATER PIPING							
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE							
HWR	DOMESTIC HOT WATER RETURN PIPING							
SAN	SANITARY WASTE PIPING							
PSAN	PUMPED SANITARY PIPING							
V	VENT PIPING							
ST	STORM SEWER PIPING							
PST	PUMPED STORM PIPING							
RC	RAIN CONDUCTOR PIPING							
ORC	OVERFLOW RAIN CONDUCTOR PIPING							
CHWR	CHILLED WATER RETURN PIPING							
CHWS	CHILLED WATER SUPPLY PIPING							
CWR	CONDENSER WATER RETURN PIPING							
CWS	CONDENSER WATER SUPPLY PIPING							
HHWR	HEATING HOT WATER RETURN PIPING							
HHWS	HEATING HOT WATER SUPPLY PIPING							
	HEAT PUMP LOOP RETURN PIPING							
	HEAT PUMP LOOP SUPPLY PIPING							
	REFRIGERANT LIQUID PIPING							
—-кs——	REFRIGERANT SUCTION PIPING							
	CEO HEAT EVOLUTION							
	GEO HEAT EXCHANCE SUDDLY							
NTS	STEAM DIDING							
HPS								
	I OW PRESSURE STEAM PIPING							
CR	STEAM CONDENSATE RETURN PIPING							
	PUMPED STEAM CONDENSATE RETURN PIPING							
I PC	LOW PRESSURE CONDENSATE PIPING							
HPC	HIGH PRESSURE CONDENSATE PIPING							
MA	MEDICAL AIR PIPING							
N	NITROGEN GAS PIPING							
02	OXYGEN GAS PIPING							
	VACUUM PIPING							

	APPLICABLE CODES AND REGULATIONS				
YEAR	CODE				
2021	MICHIGAN BUILDING CODE				
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS				
2021	MICHIGAN PLUMBING CODE				
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES				
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)				

DRAWING INDEX										
SHT NO		DESCRIPTION								
M0.00	MECH	ECHANICAL GENERAL INFORMATION								
M1.10	MECH	MECHANICAL PLAN								
	DRAWING NOTATION									
SYMB	OL	DESCRIPTION								
(1	$\rangle$	NEW WORK KEY NOTE NO. 1								
$\sum_{1}$	7	DEMOLITION KEY NOTE NO. 1								
<u>EF-</u>	<u>·1</u>	EQUIPMENT TAG								
S-1 10x1 100-	0 •2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10x10$ CFM = $100$ (TYPICAL FOR 2)								
		EXISTING DEVICES OR EQUIPMENT								
		NEW OR MODIFIED DEVICES OR EQUIPMENT								
<i>\</i>	$\leftarrow$	EXISTING SYSTEM COMPONENT TO BE REMOVED								
	)	POINT OF NEW CONNECTION								
SHEET M5.2 ON WHICH										
	6 15.2	SECTION NO. 6 SECTION SCALE: $1/4" = 1' - 0"$ SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)								
SYSTEM RISER DESIGNATION X-# SP: STAIRWELL PRESSURIZATION V: VENT SISTER NUMBER										

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
DRAWN	RFB
CHECKED	DGN
APPROVED	

KEY PLAN



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## Anchor Bay Schools MacDonald Elementary Plumbing Upgrades

Casco, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER



SHEET NUMBER

M0.00

					PL	UMB	ING FIXTURE	S/SPECIALTIES SCHEDULE
ТАС	TAGE BARRIER PIPE CONNECTION SIZES MANUFACTURER &							
TAG	FREE	TEM	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES
EWC-1	Y	SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP—PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION
NOTES:								









1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.

 $\underbrace{\text{MECHANICAL PLAN}}_{\text{SCALE:}1/32" = 1'-0"}$  $\overline{\text{SCALE:1/32}^{"} = 1'-0"}$ 

EEL HINGED
(FILTERED).

#### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

 $\langle \# \rangle$ 

 REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL - COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN





## FRENCH

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## Anchor Bay Schools MacDonald Elementary Plumbing Upgrades

Casco, Michigan

SHEET MECHANICAL PLAN









M1.10

COPPER FEEDER SCHEDULE								
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT

	POWER SYMBOL LIST
SYMBOL	DESCRIPTION
•	CONDUIT DOWN
0	CONDUIT UP
4	DISCONNECT SWITCH - NON FUSED
L	DISCONNECT SWITCH - FUSED
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
$\bullet$	GROUNDING ROD
Ē	GROUND
<del></del>	GROUNDING BAR
J	JUNCTION BOX
Μ	METER
$\mathcal{N}$	MOTOR – SINGLE PHASE
$\mathbf{V}$	MOTOR – THREE PHASE
\$м	MOTOR RATED SWITCH
φ	POWER RECEPTACLE – SIMPLEX TYPE
φ	POWER RECEPTACLE – DUPLEX TYPE
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
+	POWER RECEPTACLE – QUADRUPLEX TYPE
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE
PT	POWER RECEPTACLE – POKE THRU TYPE
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE
TC	TIME CLOCK
Т	TRANSFORMER
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST				
SYMBOL	DESCRIPTION			
F	AUDIBLE DEVICE/WALL MOUNTED			
F	VISUAL DEVICE/WALL MOUNTED			
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED			
F	AUDIBLE DEVICE/CEILING MOUNTED			
Ē	VISUAL DEVICE/CEILING MOUNTED			
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED			
¢\$	CO ALARM/SMOKE DETECTOR			
Ś	SMOKE DETECTOR			
Ô	CO ALARM			
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR			
H	HEAT DETECTOR			
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET			
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)			
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)			
F	MANUAL PULL STATION			
FS	FLOW SWITCH			
TS	TAMPER SWITCH			
FAA	FIRE ALARM ANNUNCIATOR PANEL			
FACP	FIRE ALARM CONTROL PANEL			
I/O INPUT/OUTPUT CONTROL MODULE				
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND			

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELECTRICAL ABBREVIATIONS					
ABBREV.	DESCRIPTION				
AFF	ABOVE FINISHED FLOOR				
A	AMPERE				
AF	AMPERE FUSE/AMPERE FRAME				
AWG	AMERICAN WIRE GAUGE				
AT	AMPERE TRIP				
ATS	AUTOMATIC TRANSFER SWITCH				
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)				
С	CONDUIT OR CEILING MOUNTED				
СВ	CIRCUIT BREAKER				
CL	CONTROL LOAD				
CU	COPPER				
CT	CURRENT TRANSFORMER				
DIA					
DISC					
EWC					
FPO	EMERGENCY POWER OFF				
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK				
FA	FIRE ALARM				
FACP	FIRE ALARM CONTROL PANEL				
FLA	FULL LOAD AMPS				
F	FUSE				
G/GRD	GROUND				
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER				
HOA	HAND-OFF-AUTO				
HP	HORSEPOWER				
IG	ISOLATED GROUND				
KV	KILOVOLT				
KVA	KILOVOLT AMPERE				
KW	KILOWATT				
KWH					
	MAIN CIRCUIT BREAKER				
MDP	MAIN DISTRIBUTION PANEL				
MLO	MAIN LUG ONLY				
MAX	MAXIMUM				
MIN	MINIMUM				
NEC	NATIONAL ELECTRICAL CODE				
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.				
N/NEU	NEUTRAL				
NF	NON-FUSIBLE				
NC	NORMALLY CLOSED				
NO	NORMALLY OPEN				
NIC	NOT IN CONTRACT				
PH. OR Ø	PHASE				
r pf					
PVC.	POLYVINYL CHLORIDE (PLASTIC)				
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT				
(RR)	REMOVE AND REINSTALL				
RMC	RIGID METALLIC CONDUIT				
RP	RECEPTACLE PANEL				
TBB	TELEPHONE BACKBOARD				
TYP.	TYPICAL				
UC	UNDER COUNTER				
UL	UNDERWRITERS LABORATORIES				
UPS	UNINTERRUPTIBLE POWER SUPPLY				
USB	UNIVERSAL SERIAL BUS				
V	VOLT				
VA 	VOLT AMPERE				
W					
WG					
	TRANSFORMER				
∧rwr					

#### DRAWING INDEX

DESCRIPTION

SHT NO

0.00	ELECTRICAL GENERAL INFORMATION
1.10	ELECTRICAL PLAN

DRAWING NOTATION				
SYMBOL	DESCRIPTION			
L1	LIGHTING FIXTURE TAG			
	CONSTRUCTION KEY NOTE NUMBER 1			
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1			
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)			
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)			
EQUIPMENT	EQUIPMENT TAG			
	EXISTING DEVICES OR EQUIPMENT			
	NEW OR MODIFIED DEVICES OR EQUIPMENT			
	NEW OR MODIFIED UNDERGROUND WIRING			
<del>/////////////////////////////////////</del>	EXISTING SYSTEM COMPONENT TO BE REMOVED			
Ð	POINT OF NEW CONNECTION			
	SECTION NUMBER 4			
	4 E5.2			

SHEET E5.2 ON WHICH SECTION IS DRAWN
SECTION NO. 6
<u>SECTION</u>
E5.2 SCALE: $1/4" = 1' - 0"$
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG
LIGHTING CONTROL
DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL

DEVICES REQUIRED IN THE AREA.

APPLICABLE CODES AND REGULATIONS			
YEAR	CODE		
2021	MICHIGAN BUILDING CODE		
2015	MICHIGAN ENERGY CODE		
2015	MICHIGAN RESIDENTIAL CODE		
2015	MICHIGAN REHABILITATION CODE		
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8		
2023	NATIONAL ELECTRICAL CODE (NFPA 70)		
2013	NFPA 20		
2013	NFPA 72		
2013	NFPA 101		
2013	NFPA 110		
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES		
985	DETROIT ELEVATOR CODE		

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
	•
	-
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	_
	-
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	_
L	-
DRAWN	JL
CHECKED	RWC
APPROVED	SET



FRENCH 2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



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## Anchor Bay Schools MacDonald Elementary Plumbing Upgrades

Casco, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



E0.00







## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### DEMOLITION KEYED NOTES

 ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

### (#) <u>NEW WORK KEYED NOTES</u>

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.







## FRENCH

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## Anchor Bay Schools MacDonald Elementary Plumbing Upgrades

Casco, Michigan

SHEET ELECTRICAL PLAN











# ANCHOR BAY SCHOOL DISTRICT

# MACONCE ELEMENTARY PLUMBING UPGRADES FAIR HAVEN, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURAL MECHANICAL A0.01 ARCHITECTURAL REFERENCE SHEET M0.00 MECHANICAL GENERAL INFORMATION A0.02 CODE PLAN M1.10 MECHANICAL PLAN A2.10 FLOOR PLAN





ELECTRICAL

E0.00 ELECTRICAL GENERAL INFORMATION E1.10 ELECTRICAL PLAN



# FRENCH





REFERENCE LOCATION MAP



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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT



DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC



















TACK BOARDS AND MARKER BOARDS

INTERACTIVE PANEL MOUNTING

KEY PLAN

ISSUE DATE	1330ED TOIX
05/08/2025	BIDS
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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ

A0.01





CODE PLAN SCALE: NTS

#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 320. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 62,738 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

- MACONCE ELEMENTARY
- 1) DESIGN CODES 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)

KEY PLAN

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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APPROVED	DCJ



#### PROJECT

Anchor Bay Schools Maconce Elementary Plumbing Upgrades

Ira, Michigan

SHEET CODE PLAN

















CMU
 STAINLESS PLATE - COORDINATE SIZE IN FIELD ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH EXISTING GLAZED CMU



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APPROVED	DCJ	



## PROJECT

Anchor Bay Schools Maconce Elementary Plumbing Upgrades

Ira, Michigan

SHEET FLOOR PLAN



#### WORK ROOM C138 WORK ROOM C134 OFFICE C131 **CLASSROOM** CLASSROOM C136 OFFICE C132 T.R. COATS C130 OFFICE C133 COATS C137 COATS C141 COATS C126 T.R. C142 CLASSROOM C125 CLASSROOM C140 WORK ROOM C143 WORK ROOM C128



MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE	
AD	ACCESS DOOR	
AE	AIR EXTRACTOR	
AFF	ABOVE FINISHED FLOOR	
APD	AIR PRESSURE DROP	
ASR	AUTOMATIC SPRINKLER RISER	
BFP	BACKFLOW PREVENTER	
BHP	BRAKE HORSEPOWER	
BTU	BRITISH THERMAL LINIT	
BTUH	BRITISH THERMAL UNITS PER HOUR	
BWV	BACKWATER VALVE	
САР	CAPACITY	
CAV	CONSTANT AIR VOLUME	
CFH	CUBIC FEET PER HOUR	
CFM	CUBIC FEET PER MINUTE	
CIRC	CIRCULATING	
CLG	COOLING	
СО	CLEAN OUT	
CONT	CONTINUATION OR CONTINUED	
CONV	CONVECTOR	
CUH	CABINET UNIT HEATER	
CV	CONTROL VALVE	
DB	DRY BULB IEMPERATURE	
DEG		
DTC	DRAIN TILE CONNECTION	
DWH	DOMESTIC WATER HEATER	
(E)	EXISTING	
EA/EXH	EXHAUST AIR	
EAT	ENTERING AIR TEMPERATURE	
EDB	ENTERING DRY BULB TEMPERATURE	
EF	EXHAUST FAN	
EJ	EXPANSION JOINT	
EL	ELEVATION	
ELECT	ELECTRICAL	
EMS	ENERGY MANAGEMENT SYSTEM	
ESP		
EWC	ELECTRIC WATER COOLER	
°F	DEGREES FAHRENHEIT	
FA	FACE AREA (COIL) / FREE AREA (LOUVER)	
FC	FLEXIBLE CONNECTION	
FD	FLOOR DRAIN	
FDC	FIRE DEPARTMENT CONNECTION	
FH	FIRE HYDRANT	
FHC	FIRE HOSE CABINET	
FHR	FIRE HOSE RACK	
FHV	FIRE HOSE VALVE	
	FULL LOAD AMPS	
	FLOUR	
FFD	FLINNEL FLOOR DRAIN	
FFE	FINISHED FLOOR ELEVATION	
FS	FLOOR SINK	
FT	FEET	
FURN	FURNISHED	
FV	FACE VELOCITY	
FVC	FIRE VALVE CABINET	
GAL	GALLON	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
HB	HUSE BIBB	
HU LLD		
l <sup>10<sup>-</sup></sup>		

MECI	MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION		
HR	HOUR		
HTG	HEATING		
HYD	HYDRANT		
HZ	HERTZ		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IN	INCHES		
INST	INSTALLED		
INV	INVERT		
ISP	INTERNAL STATIC PRESSURE		
IW	INDIRECT WASTE		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
LAV	LAVATORY		
LBS/HR	POUNDS PER HOUR		
LDB	LEAVING DRY BULB TEMPERATURE		
LRA	LOCKED ROTOR AMPS		
LWB	LEAVING WET BULB TEMPERATURE		
MAV	MANUAL AIR VENT		
MAX	MAXIMUM		
МВН	1000 BRITISH THERMAL UNITS PER HOUR		
MCA	MINIMUM CIRCUIT AMPACITY		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MH	MANHOLE		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)		
MOP	MAXIMUM OVER-CURRENT PROTECTION		
N.C.	NOISE CRITERIA		
NIC	NOT IN CONTRACT		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NOM			
	OUTSIDE AIR		
OBD	OPPOSED BLADE DAMPER		
	OUTSIDE DIAMETER		
	OVERELOW ROOF SUMP		
0587	OUTSIDE SCREW AND YOKE		
PD	PRESSURE DROP (FEFT OF WATER)		
PRV	PRESSURE REDUCING VALVE		
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
PSIG	POUNDS PER SQUARE INCH – GAUGF		
PT	PRESSURE / TEMPERATURE PORT		
RA	RETURN AIR		
RH	RELATIVE HUMIDITY		
REQD	REQUIRED		
REL.A	RELIEF AIR		
RPM	REVOLUTIONS PER MINUTE		
RPZ	REDUCED PRESSURE ZONE		
RS	ROOF SUMP		
SA	SUPPLY AIR		
SH	SHOWER		
SP	STATIC PRESSURE		
SqFt / SF	SQUARE FOOT/SQUARE FEET		
SS	SERVICE SINK		
TC	TEMPERATURE CONTROL		
Т&Р	TEMPERATURE AND PRESSURE		
TSP	TOTAL STATIC PRESSURE		
TYP	TYPICAL		
UG	UNDERGROUND		
UH	UNIT HEATER		
UL	UNDERWRITERS LABORATORY		
UNO	UNLESS NOTED OTHERWISE		

Μ ABBF W& W WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_[ \_\_\_\_E \_\_\_\_X $\rightarrow$ \_\_\_> --\_\_\_\_¤ \_\_\_\_/*,* CHO 6 \_\_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
-----------------------	------------

REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS		
ABBREV.	DESCRIPTION	
o	PIPE ELBOW UP	
	PIPE ELBOW DOWN	
<del></del>	PIPE TEE DOWN	
	DIRECTION OF FLOW	
	UNION	
	STRAINER	
	CONCENTRIC REDUCER	
	ECCENTRIC REDUCER	
	EXPANSION JOINT	
	FLEXIBLE CONNECTION	
	PIPE ANCHOR	
	PIPE GUIDE	
, M		
	GLUBE VALVE	
	BALL VALVE	
	BUTTERFLY VALVE	
<u>→</u>	BACKWATER VALVE	
<u>k</u>	ANGLE VALVE	
	CHECK VALVE (SWING)	
	CHECK VALVE (SPRING)	
I∕⊽I	PLUG VALVE	
	NEEDLE VALVE	
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)	
↓	PRESSURE REGULATING VALVE	
X	SOLENOID VALVE	
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)	
$\bigcirc$	CENTRIFUGAL FAN	
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE	
	TRAP (PLAN VIEW)	
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)	
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)	
Ô	ROOF SUMP	
——⊖ C0	CLEAN OUT (IN FLOOR)	
//co	CLEAN OUT (IN LINE)	
	CLEAN OUT (WALL)	
BFP	BACKFLOW PREVENTER	
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY	
+	HOSE BIBB, WALL HYDRANT	
	DIRECTION OF PIPE PITCH	
$\odot$	SPRINKLER HEAD (UPRIGHT)	
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)	
—FS	FLOW SWITCH	
<u> </u>	SIAMESE CONNECTION (YARD)	
, ,	SIAMESE CONNECTION (WALL MOUNTED)	
× H	FIRE HYDRANT	
	FLOW MEASURING DEVICE	
<u>≫</u> ⊼	BALANCING VAI VF	
	COMBINATION FLOW MEASURING AND RALANCING DEVICE	
<u>ド</u> 「天MAV		
¥		

MECHANICAL SYMBOLS		
ABBREV.	DESCRIPTION	
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)	
	RECTANGULAR TAKE-OFF (DOUBLE LINE)	
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)	
	ROUND TAKE-OFF (DOUBLE LINE)	
	SPIN-IN FITTING (WITH VOLUME DAMPER)	
	ELBOW (WITH TURNING VANES)	
	RADIUS RECTANGULAR ELBOW	
	RADIUS ROUND ELBOW	
	RECTANGULAR ELBOW UP	
	ROUND ELBOW UP	
	RECTANGULAR ELBOW DOWN	
	ROUND ELBOW DOWN	
	CONCENTRIC TRANSITION (DOUBLE LINE)	
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)	
	ECCENTRIC TRANSITION (DOUBLE LINE)	
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)	
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
ς <u>ι</u> _Γ_ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER	
,−⊋	SUPPLY DIFFUSER	
	LINEAR SLOT DIFFUSER	
$\leftarrow$	RETURN OR EXHAUST GRILLE	
<b></b>	TRANSFER GRILLE	
	CROSS SECTION OF SUPPLY AIR DUCT	
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT	
	EXISTING FIRE DAMPER (HORIZONTAL)	
	EXISTING	
	FIRE DAMPER (VERTICAL) NEW	
<u> </u>	EXISTING SMOKE DAMPER	
	NEW	
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER	
	NEW (HORIZONTAL)	
	VOLUME DAMPER (MANUALLY ADJUSTABLE)	
M	MOTORIZED DAMPER	
SD T	SMOKE DETECTOR	
<u>(C02</u> )	CO2 SENSOR	
(T)	THERMOSTAT OR TEMPERATURE SENSOR	
H	HUMIDISTAT OR HUMIDITY SENSOR	
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW	

	PIPING LEGEND
ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
——————————————————————————————————————	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
F0S	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
——HW——	DOMESTIC HOT WATER PIPING
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
—CHWR—	CHILLED WATER RETURN PIPING
	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
——HHWR——	HEATING HOT WATER RETURN PIPING
—HHWS—	HEATING HOT WATER SUPPLY PIPING
HPLR	HEAT PUMP LOOP RETURN PIPING
HPLS	HEAT PUMP LOOP SUPPLY PIPING
RL	REFRIGERANT LIQUID PIPING
	REFRIGERANT SUCTION PIPING
HGB	HOT GAS BY-PASS PIPING
GXHR	GEO HEAT EXCHANGE RETURN
GXHS	GEO HEAT EXCHANGE SUPPLY
	SIEAM PIPING
HPS-	HIGH PRESSURE STEAM PIPING
	STEAM CONDENSATE PETLEN DIDING
	DIMPEN STEAM CONDENCATE DETUDAL DIDING
	LOW DESSURE CONDENSATE DIDING
	HIGH PRESSURE CONDENSATE DIDINIC
MΔ	MEDICAL AIR PIPING
	NITROGEN GAS PIPING
	OXYGEN GAS PIPING
VAC	VACUUM PIPING

APPLICABLE CODES AND REGULATIONS				
YEAR	CODE			
2021	MICHIGAN BUILDING CODE			
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS			
2021	MICHIGAN PLUMBING CODE			
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES			
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)			

		DRAWING INDEX							
SHT NO		DESCRIPTION							
M0.00	MECH	MECHANICAL GENERAL INFORMATION							
M1.10	MECH	ANICAL PLAN							
	[	DRAWING NOTATION							
SYMB	OL	DESCRIPTION							
(1	$\rangle$	NEW WORK KEY NOTE NO. 1							
$\sum_{1}$	7	DEMOLITION KEY NOTE NO. 1							
<u>EF–</u>	. <u>1</u>	EQUIPMENT TAG							
S-1 10x10 100-2		AIR TERMINAL TAG: IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10\times10$ CFM = $100$ (TYPICAL FOR 2) S = SUPPLY R = RETURN E = EXHAUST T = TRANSFER							
		EXISTING DEVICES OR EQUIPMENT							
		NEW OR MODIFIED DEVICES OR EQUIPMENT							
<i>\</i>	$\leftarrow$	EXISTING SYSTEM COMPONENT TO BE REMOVED							
<b>`</b> •		POINT OF NEW CONNECTION							
	<u> </u>	A SHEET M5.2 ON WHICH SECTION DRAWN							
	6 15.2	SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)							
$\bigcirc$	SYSTEM RISER DESIGNATION X-# RISER NUMBER SP: STAIRWELL PRESSURIZATION V: VENT F: EXHAUST								

ISSUE DATE	ISSUED FOR	
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KEY PLAN



FRENCH 2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



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Anchor Bay Schools Maconce Elementary Plumbing Upgrades

Ira, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER



SHEET NUMBER

M0.00

TAG	BARRIER FREE
EWC-1	Y
NOTES:	









## PLUMBING FIXTURES/SPECIALTIES SCHEDULE

ITEM	PIPE CONNECTION SIZES				MANUFACTURER &		
ΠLM	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES	
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION	

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.



EEL HINGED
(FILTERED).

#### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH. OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

 $\langle \# \rangle$ 

 REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL - COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN





# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



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## Anchor Bay Schools Maconce Elementary Plumbing Upgrades

Ira, Michigan

SHEET MECHANICAL PLAN











				COPI	PER FEEDER SCHEDULE			
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT

POWER SYMBOL LIST				
SYMBOL	DESCRIPTION			
•	CONDUIT DOWN			
0	CONDUIT UP			
4	DISCONNECT SWITCH - NON FUSED			
L	DISCONNECT SWITCH - FUSED			
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER			
	ELECTRICAL PANEL			
$\bullet$	GROUNDING ROD			
Ē	GROUND			
<del></del>	GROUNDING BAR			
J	JUNCTION BOX			
Μ	METER			
$\mathcal{N}$	MOTOR – SINGLE PHASE			
$\mathbf{V}$	MOTOR – THREE PHASE			
\$м	MOTOR RATED SWITCH			
φ	POWER RECEPTACLE – SIMPLEX TYPE			
φ	POWER RECEPTACLE – DUPLEX TYPE			
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER			
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE			
+	POWER RECEPTACLE – QUADRUPLEX TYPE			
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE			
PT	POWER RECEPTACLE – POKE THRU TYPE			
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE			
TC	TIME CLOCK			
Т	TRANSFORMER			
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS			

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST						
SYMBOL	DESCRIPTION					
F	AUDIBLE DEVICE/WALL MOUNTED					
F	VISUAL DEVICE/WALL MOUNTED					
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED					
F	AUDIBLE DEVICE/CEILING MOUNTED					
Ē	VISUAL DEVICE/CEILING MOUNTED					
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED					
¢\$	CO ALARM/SMOKE DETECTOR					
Ś	SMOKE DETECTOR					
Ô	CO ALARM					
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR					
H	HEAT DETECTOR					
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET					
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)					
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)					
F	MANUAL PULL STATION					
FS	FLOW SWITCH					
TS	TAMPER SWITCH					
FAA	FIRE ALARM ANNUNCIATOR PANEL					
FACP	FIRE ALARM CONTROL PANEL					
1/0	INPUT/OUTPUT CONTROL MODULE					
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND					

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELEC	CTRICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
A	AMPERE
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
С	CONDUIT OR CEILING MOUNTED
СВ	CIRCUIT BREAKER
CL	CONTROL LOAD
CU	COPPER
CT	CURRENT TRANSFORMER
DIA	
DISC	
EWI	
FPO	EMERGENCY POWER OFF
(E)	EXISTING FLECTRICAL FOUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	
KWH	
LP MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
гп. UK Ø D	
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
RMC	RIGID METALLIC CONDUIT
RP	RECEPTACLE PANEL
TBB	TELEPHONE BACKBOARD
TYP.	TYPICAL
UC	UNDER COUNTER
UL	UNDERWRITERS LABORATORIES
UPS	UNINIERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V \/A	VOLT AMPERE
W	
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

#### DRAWING INDEX

DESCRIPTION

SHT NO

0.00	ELECTRICAL GENERAL INFORMATION
1.10	ELECTRICAL PLAN

DRAWING NOTATION		
SYMBOL	DESCRIPTION	
L1	LIGHTING FIXTURE TAG	
	CONSTRUCTION KEY NOTE NUMBER 1	
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1	
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)	
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)	
EQUIPMENT	EQUIPMENT TAG	
	EXISTING DEVICES OR EQUIPMENT	
	NEW OR MODIFIED DEVICES OR EQUIPMENT	
	NEW OR MODIFIED UNDERGROUND WIRING	
<del>/////////////////////////////////////</del>	EXISTING SYSTEM COMPONENT TO BE REMOVED	
Ð	POINT OF NEW CONNECTION	
	-SECTION NUMBER 4	

E5.2
SHEET E5.2 ON WHICH SECTION IS DRAWN
SECTION NO. 6
<u>SECTION</u>
E5.2 SCALE: $1/4^{"} = 1' - 0"$
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG
LIGHTING CONTROL
SPACE TYPE 1 DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.

APPLICABLE CODES AND REGULATIONS	
YEAR	CODE
2021	MICHIGAN BUILDING CODE
2015	MICHIGAN ENERGY CODE
2015	MICHIGAN RESIDENTIAL CODE
2015	MICHIGAN REHABILITATION CODE
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8
2023	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2013	NFPA 72
2013	NFPA 101
2013	NFPA 110
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
985	DETROIT ELEVATOR CODE

ISSUE DATE	ISSUED FOR
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DRAWN	JL
CHECKED	RWC
APPROVED	SET



FRENCH 2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. , SES Project #23 0019 01 PROJECT

# Anchor Bay Schools Maconce Elementary Plumbing Upgrades

Ira, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



SHEET NUMBER

E0.00



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## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

### (#) <u>NEW WORK KEYED NOTES</u>

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.







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## Anchor Bay Schools Maconce Elementary Plumbing Upgrades

Ira, Michigan

SHEET ELECTRICAL PLAN









# ANCHOR BAY SCHOOL DISTRICT

# NALDRETT ELEMENTARY PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

ARCHITECTURAL
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A0.01 ARCHITECTURAL REFERENCE SHEET A0.02 CODE PLAN

A2.10 COMPOSITE FLOOR PLAN

MECHANICAL M0.00 MECHANICAL GENERAL INFORMATION M1.10 MECHANICAL PLAN





ELECTRICAL

E0.00 ELECTRICAL GENERAL INFORMATION E1.10 ELECTRICAL PLAN



# FRENCH

47800 SUGARBUSH, NEW BALTIMORE, MICHIGAN, 48047





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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contras	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT



DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC





















#### BUILDING INFORMATION

- 1. EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 353. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 57,671 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK
FOR DRINKING FOUNTAIN REPLACEMENT

## CODE PLAN INFORMATION

DESIGN CODES
 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)
 NFPA 101 LIFE SAFETY CODE 2012 EDITION
 2021 MICHIGAN PLUMBING CODE
 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILIT

 2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
 A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

> KPK CAW DCJ

CODE PLAN

A0.02



• 

EXISTING CMU
STAINLESS PLATE - COORDINATE SIZE IN FIELD ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH EXISTING WALL BASE

## STAINLESS PLATE -COORDINATE SIZE IN FIELD ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH EXISTING WALL BASE

PROPOSED



KPK CAW DCJ

FLOOR PLAN

A2.10

MECHANICAL ABBREVIATIONS	
ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL LINIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
САР	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
СО	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB IEMPERATURE
DEG	
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
	FULL LOAD AMPS
	FLOUR
FFD	FLINNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HUSE BIBB
HU LLD	
l <sup>10<sup>-</sup></sup>	

MECI	MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION		
HR	HOUR		
HTG	HEATING		
HYD	HYDRANT		
HZ	HERTZ		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IN	INCHES		
INST	INSTALLED		
INV	INVERT		
ISP	INTERNAL STATIC PRESSURE		
IW	INDIRECT WASTE		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
LAV	LAVATORY		
LBS/HR	POUNDS PER HOUR		
LDB	LEAVING DRY BULB TEMPERATURE		
LRA	LOCKED ROTOR AMPS		
LWB	LEAVING WET BULB TEMPERATURE		
MAV	MANUAL AIR VENT		
MAX	MAXIMUM		
МВН	1000 BRITISH THERMAL UNITS PER HOUR		
MCA	MINIMUM CIRCUIT AMPACITY		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MH	MANHOLE		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)		
MOP	MAXIMUM OVER-CURRENT PROTECTION		
N.C.	NOISE CRITERIA		
NIC	NOT IN CONTRACT		
NC	NORMALLY CLOSED		
NO	NORMALLY OPEN		
NOM			
	OUTSIDE AIR		
OBD	OPPOSED BLADE DAMPER		
	OUTSIDE DIAMETER		
	OVERELOW ROOF SUMP		
0587	OUTSIDE SCREW AND YOKE		
PD	PRESSURE DROP (FEFT OF WATER)		
PRV	PRESSURE REDUCING VALVE		
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
PSIG	POUNDS PER SQUARE INCH – GAUGF		
PT	PRESSURE / TEMPERATURE PORT		
RA	RETURN AIR		
RH	RELATIVE HUMIDITY		
REQD	REQUIRED		
REL.A	RELIEF AIR		
RPM	REVOLUTIONS PER MINUTE		
RPZ	REDUCED PRESSURE ZONE		
RS	ROOF SUMP		
SA	SUPPLY AIR		
SH	SHOWER		
SP	STATIC PRESSURE		
SqFt / SF	SQUARE FOOT/SQUARE FEET		
SS	SERVICE SINK		
TC	TEMPERATURE CONTROL		
Т&Р	TEMPERATURE AND PRESSURE		
TSP	TOTAL STATIC PRESSURE		
TYP	TYPICAL		
UG	UNDERGROUND		
UH	UNIT HEATER		
UL	UNDERWRITERS LABORATORY		
UNO	UNLESS NOTED OTHERWISE		

Μ ABBF W8 W WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_ — E \_\_\_\_X \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_ \_\_\_> --\_\_\_\_\_X \_\_\_\_( ——/*/* CHO 6 \_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
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REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS							
ABBREV.	DESCRIPTION						
o	PIPE ELBOW UP						
	PIPE ELBOW DOWN						
<del></del>	PIPE TEE DOWN						
	DIRECTION OF FLOW						
	UNION						
	STRAINER						
	CONCENTRIC REDUCER						
	ECCENTRIC REDUCER						
	EXPANSION JOINT						
	FLEXIBLE CONNECTION						
	PIPE ANCHOR						
	PIPE GUIDE						
, M							
	GLUBE VALVE						
	BALL VALVE						
	BUTTERFLY VALVE						
<u>→</u>	BACKWATER VALVE						
<u>k</u>	ANGLE VALVE						
	CHECK VALVE (SWING)						
	CHECK VALVE (SPRING)						
I∕⊽I	PLUG VALVE						
	NEEDLE VALVE						
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)						
↓	PRESSURE REGULATING VALVE						
X	SOLENOID VALVE						
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)						
$\bigcirc$	CENTRIFUGAL FAN						
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE						
	TRAP (PLAN VIEW)						
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)						
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)						
Ô	ROOF SUMP						
——⊖ C0	CLEAN OUT (IN FLOOR)						
//co	CLEAN OUT (IN LINE)						
	CLEAN OUT (WALL)						
BFP	BACKFLOW PREVENTER						
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY						
+	HOSE BIBB, WALL HYDRANT						
	DIRECTION OF PIPE PITCH						
$\odot$	SPRINKLER HEAD (UPRIGHT)						
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)						
—FS	FLOW SWITCH						
<u> </u>	SIAMESE CONNECTION (YARD)						
, ,	SIAMESE CONNECTION (WALL MOUNTED)						
× H	FIRE HYDRANT						
	FLOW MEASURING DEVICE						
<u>≫</u> ⊼	BALANCING VAI VF						
<u>ド</u> 「天MAV							
¥							

MECHANICAL SYMBOLS								
ABBREV.	DESCRIPTION							
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)							
	RECTANGULAR TAKE-OFF (DOUBLE LINE)							
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)							
	ROUND TAKE-OFF (DOUBLE LINE)							
	SPIN-IN FITTING (WITH VOLUME DAMPER)							
	ELBOW (WITH TURNING VANES)							
	RADIUS RECTANGULAR ELBOW							
	RADIUS ROUND ELBOW							
	RECTANGULAR ELBOW UP							
	ROUND ELBOW UP							
	RECTANGULAR ELBOW DOWN							
	ROUND ELBOW DOWN							
	CONCENTRIC TRANSITION (DOUBLE LINE)							
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)							
	ECCENTRIC TRANSITION (DOUBLE LINE)							
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)							
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)							
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)							
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)							
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)							
	FLEXIBLE CONNECTION							
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER							
,−⊋	SUPPLY DIFFUSER							
	LINEAR SLOT DIFFUSER							
$\leftarrow$	RETURN OR EXHAUST GRILLE							
<b></b>	TRANSFER GRILLE							
	CROSS SECTION OF SUPPLY AIR DUCT							
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT							
	EXISTING FIRE DAMPER (HORIZONTAL)							
	EXISTING							
	FIRE DAMPER (VERTICAL) NEW							
<u> </u>	EXISTING SMOKE DAMPER							
	NEW							
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)							
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER							
	NEW (HORIZONTAL)							
	VOLUME DAMPER (MANUALLY ADJUSTABLE)							
M	MOTORIZED DAMPER							
SD T	SMOKE DETECTOR							
<u>(C02</u> )	CO2 SENSOR							
(T)	THERMOSTAT OR TEMPERATURE SENSOR							
H	HUMIDISTAT OR HUMIDITY SENSOR							
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW							

PIPING LEGEND						
ABBREV.	DESCRIPTION					
CA	COMPRESSED AIR PIPING					
CD	CONDENSATE DRAIN PIPING					
DT	DRAIN TILE					
——————————————————————————————————————	FIRE PROTECTION PIPING					
FOR	FUEL OIL RETURN PIPING					
F0S	FUEL OIL SUPPLY PIPING					
G	NATURAL GAS PIPING					
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING					
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING					
CW	DOMESTIC COLD WATER PIPING					
	NON POTABLE COLD WATER PIPING					
TW	TEMPERED WATER PIPING					
——HW——	DOMESTIC HOT WATER PIPING					
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE					
HWR	DOMESTIC HOT WATER RETURN PIPING					
	SANITARY WASTE PIPING					
PSAN	PUMPED SANITARY PIPING					
V	VENT PIPING					
ST	STORM SEWER PIPING					
PST	PUMPED STORM PIPING					
RC	RAIN CONDUCTOR PIPING					
ORC	OVERFLOW RAIN CONDUCTOR PIPING					
—CHWR—	CHILLED WATER RETURN PIPING					
	CHILLED WATER SUPPLY PIPING					
CWR	CONDENSER WATER RETURN PIPING					
CWS	CONDENSER WATER SUPPLY PIPING					
——HHWR——	HEATING HOT WATER RETURN PIPING					
—HHWS—	HEATING HOT WATER SUPPLY PIPING					
HPLR	HEAT PUMP LOOP RETURN PIPING					
HPLS	HEAT PUMP LOOP SUPPLY PIPING					
RL	REFRIGERANT LIQUID PIPING					
	REFRIGERANT SUCTION PIPING					
HGB	HOT GAS BY-PASS PIPING					
GXHR	GEO HEAT EXCHANGE RETURN					
GXHS	GEO HEAT EXCHANGE SUPPLY					
	SIEAM PIPING					
HPS-	HIGH PRESSURE STEAM PIPING					
	STEAM CONDENSATE PETLEN DIDING					
	DIMPEN STEAM CONDENCATE DETUDAL DIDING					
	LOW DESSURE CONDENSATE DIDING					
	HIGH PRESSURE CONDENSATE DIDINIC					
MΔ	MEDICAL AIR PIPING					
N	NITROGEN GAS PIPING					
	OXYGEN GAS PIPING					
VAC	VACUUM PIPING					

APPLICABLE CODES AND REGULATIONS						
YEAR	CODE					
2021	MICHIGAN BUILDING CODE					
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS					
2021	MICHIGAN PLUMBING CODE					
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES					
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)					

DRAWING INDEX								
SHT NO	DESCRIPTION							
M0.00	MECHANICAL GENERAL INFORMATION							
M1.10 MECHANICAL PLAN								
DRAWING NOTATION								
SYMB	OL	DESCRIPTION						
(1	$\rangle$	NEW WORK KEY NOTE NO. 1						
$\int_{1}$	7	DEMOLITION KEY NOTE NO. 1						
<u>EF–</u>	<u>·1</u>	EQUIPMENT TAG						
S-1 10x1 100-	0 ·2	AIR TERMINAL TAG: IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10\times10$ CFM = $100$ (TYPICAL FOR 2) S = SUPPLY R = RETURN E = EXHAUST T = TRANSFER						
EXISTING DEVICES OR EQUIPMENT								
	NEW OR MODIFIED DEVICES OR EQUIPMENT							
<del>\ / /</del>		EXISTING SYSTEM COMPONENT TO BE REMOVED						
~6	POINT OF NEW CONNECTION							
SHEET M5.2 ON WHICH								
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)								
SYSTEM RISER DESIGNATION X-# RISER NUMBER SP: STAIRWELL PRESSURIZATION V: VENT E: EXHAUST								

ISSUE DATE	ISSUED FOR	
05/08/2025	BIDS	
		-
		-
		-
		-
		-
		-
		-
DRAWN	RFB	
CHECKED	DGN	

KEY PLAN



2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



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Anchor Bay Schools Naldrett Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER



SHEET NUMBER

M0.00

TAG	BARRIER FREE
EWC-1	Y
NOTES:	





## PLUMBING FIXTURES/SPECIALTIES SCHEDULE

ITEM	PIPE CONNECTION SIZES				MANUFACTURER &					
	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES				
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS S DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION				

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1. 3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.

FEEL HINGED
(FILTERED).

#### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

 $\langle \# \rangle$ 

#### **KEYED NOTES**

 REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES. KEY PLAN





# FRENCH

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## Anchor Bay Schools Naldrett Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL PLAN









M1.10

	COPPER FEEDER SCHEDULE							
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	30N	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT

	POWER SYMBOL LIST
SYMBOL	DESCRIPTION
•	CONDUIT DOWN
0	CONDUIT UP
4	DISCONNECT SWITCH - NON FUSED
L	DISCONNECT SWITCH - FUSED
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
$\bullet$	GROUNDING ROD
Ē	GROUND
<del></del>	GROUNDING BAR
J	JUNCTION BOX
Μ	METER
$\mathcal{N}$	MOTOR – SINGLE PHASE
$\mathbf{V}$	MOTOR – THREE PHASE
\$м	MOTOR RATED SWITCH
φ	POWER RECEPTACLE – SIMPLEX TYPE
φ	POWER RECEPTACLE – DUPLEX TYPE
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
+	POWER RECEPTACLE – QUADRUPLEX TYPE
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE
PT	POWER RECEPTACLE – POKE THRU TYPE
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE
TC	TIME CLOCK
Т	TRANSFORMER
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS

ALL DEVICE RATIN AND SCHEDULES. NGS/SIZES SHALL BE COORDINATED WITH PLANS

FIRE ALARM SYMBOL LIST									
SYMBOL	DESCRIPTION								
F	AUDIBLE DEVICE/WALL MOUNTED								
F	VISUAL DEVICE/WALL MOUNTED								
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED								
F	AUDIBLE DEVICE/CEILING MOUNTED								
Ē	VISUAL DEVICE/CEILING MOUNTED								
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED								
¢\$	CO ALARM/SMOKE DETECTOR								
Ś	SMOKE DETECTOR								
Ô	CO ALARM								
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR								
H	HEAT DETECTOR								
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET								
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)								
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)								
F	MANUAL PULL STATION								
FS	FLOW SWITCH								
TS	TAMPER SWITCH								
FAA	FIRE ALARM ANNUNCIATOR PANEL								
FACP	FIRE ALARM CONTROL PANEL								
1/0	INPUT/OUTPUT CONTROL MODULE								
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND								

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELEC	CTRICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
۵FF	ABOVE FINISHED FLOOR
Δ	
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
С	CONDUIT OR CEILING MOUNTED
СВ	CIRCUIT BREAKER
CL	CONTROL LOAD
CU	COPPER
СТ	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	
	LIGHTING PANEL
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
PH. OR Ø	PHASE
Р	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
KMC	
τρρ	TELEDHONE RACKDOADD
TYP	
	UNDER COUNTER
UI	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT AMPERE
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

#### DRAWING INDEX

SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
E1.10	ELECTRICAL PLAN

	DRAWING NOTATION								
SYMBOL	DESCRIPTION								
L1	LIGHTING FIXTURE TAG								
$\langle 1 \rangle$	CONSTRUCTION KEY NOTE NUMBER 1								
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1								
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)								
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)								
EQUIPMENT	EQUIPMENT TAG								
	EXISTING DEVICES OR EQUIPMENT								
	NEW OR MODIFIED DEVICES OR EQUIPMENT								
	NEW OR MODIFIED UNDERGROUND WIRING								
<del>/////////////////////////////////////</del>	EXISTING SYSTEM COMPONENT TO BE REMOVED								
•	POINT OF NEW CONNECTION								
	SECTION NUMBER 4								
	4 E5.2								

SHEET E5.2 ON WHICH SECTION IS DRAWN
SECTION NO. 6
6 SECTION
E5.2 SCALE: $1/4 = 1 - 0$
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG
LIGHTING CONTROL
DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.

	APPLICABLE CODES AND REGULATIONS						
YEAR	CODE						
2021	MICHIGAN BUILDING CODE						
2015	MICHIGAN ENERGY CODE						
2015	MICHIGAN RESIDENTIAL CODE						
2015	MICHIGAN REHABILITATION CODE						
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8						
2023	NATIONAL ELECTRICAL CODE (NFPA 70)						
2013	NFPA 20						
2013	NFPA 72						
2013	NFPA 101						
2013	NFPA 110						
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES						
985	DETROIT ELEVATOR CODE						

ISSUE DATE ISSUED FOR BIDS 05/08/2025 DRAWN CHECKED RWC APPROVED SET



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# Anchor Bay Schools Naldrett Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



SHEET NUMBER

E0.00



Panel Designatio	n: <b>(E)</b>	RP-E	GA				Mai	<b>n:</b> 1:	25A I	MLO			P-P \	/oltage:	208	
Panel Locatio	Bussing: 125A							P-N Voltage: 120								
Fed Froi	Ground Bus: STANDARD									Phase	3					
Feeder Siz	e: EXISTIN	G				Μοι	Intin	<b>a:</b> SI	IIRFA	CF				Wire	Δ	
		0				N		9.0 1010	01(17) 1007	<u>C</u> L		lin SC In	errupting	Patina	10 000	
	Links	Decent	Cont													
Remarks	Load	Load	Load	Load	Prot	Скт	A	B C	<u>;</u>  Скт	Prot	Load	Load	Load	Light	Remarks	
E) RECEPT - PRINCIPAL & CLERICAL		1000			20	1	X		2	20			1000		(E) RECEPT - CLASSROOM D128, 124	
E) RECEPT - CLERICAL		1000			20	3		X	4	20			1000		(E) RECEPT - CLASSROOM D109, 126	
E) RECEPT - CLERICAL		1000			20	5		X	6	20			1000		(E) RECEPT - CLASSROOM D107, 108	
E) RECEPT - MEDIA CENTER		1000			20	7	X		8	20			1000		(E) RECEPT - CLASSROOM D104, 105	
IEW GFCICB - WATER COOLER				575	20	9		X	10	20			1000		(E) RECEPT - CLASSROOM D101, 102	
VEW GFCICB - (2) WATER COOLERS				1150	20	11		X	12	20					SPARE	
PARE					20	13	X		14	20					SPARE	
PARE					20	15		x	16	20					SPARE	
PARE					20	17		X	18	20					SPARE	
PARE					20	19	X		20	20					SPARE	
PARE					20	21		x	22	20					SPARE	
PARE					20	23		X	24	20					SPARE	
PARE					20	25	X		26	20					SPARE	
PARE					20	27		x	28	20					SPARE	
PARE					20	29		X	30	20					SPARE	
PARE					20	31	X		32	20					SPARE	
PARE					20	33		x	34	20					SPARE	
PARE					20	35		x	36	20					SPARE	
PARE					20	37	x		38	20					SPARE	
SP ARE					20	39		x	40	20					SPARE	
SP ARE					20	41		X	42	20	300				(E) TEMPERATURE CONTROLS	
		Connec	ted Load				Dei	mana	3			Demano	d Load		]	
Load Description	ØA	ØB	ØC	Total	1		Fo	ctor			ØA	ØB	ØC	Total	1	
ighting or Continous Load (Volt-Amps)	0	0	0	0			1	.25			0	0	0	0		
180VA Receptacle Load (Volt-Amps)	4000	3000	2000	9000		1.0	O (Fi	rst 10	kVA)		4000	3000	2000	9000	Receptacle Demand Factor per Article	
	Am	iount ove	er 10kVA	0	0.50 (> 10kVA)				0	0	0	0	220.44 of the National Electrical Code.			
Continuous Load (Volt-Amps)	0	0	0	0	1.25						0	0	0	0	· · · · · · · · · · · · · · · · · · ·	
Non-Continuous Load (Volt-Amps)	0	575	1450	2025	1.00					0	575	1450	2025	1		
Total Load (kVA)	4.00	3.58	3.45	11.03	125% of Light/Cont and Recept					4.00	3.58	3.45	11.03			
Total Ampacity (Amps)	33.3	29.8	28.7	30.6	(<10kVA) logd plus other logd					33.3	29.8	28.7	30.6			
Minimum Feeder Sizing (Amps)	41.6	36.0	32.9	36.8							41.6	36.0	32.9	36.8	1	

PANEL NAM LOCATIO SOURC FEEDER SIZ	E: (E) RP N: EXISTING E: EXISTING E: EXISTING	-В			GR M	N BUSS OUND OUNT NEU	AA SIN D BI TIN TRA	IN: 1 IG: 1 US: S IG: S AL: 1	25 MI 25A TAND URFA 00%	-O ARD CE			L MIN SC INTERR	L-L VOLTAGE -N VOLTAGE PHASE WIRE RUPT RATING	: 208 : 120 : 1 : 3 : 10,000
LOAD DESCRIPTION	LIGHTING LOAD	RECEPTACLE	CONTINUOUS LOAD	NON- CONTINUOUS LOAD	OCPD	СКТ	L1	L	2 СКТ	OCPD	NON- CONTINUOUS LOAD	CONTINUOUS LOAD	RECEPTACLE	LIGHTIN G LOAD	
(E) BOIL ROOM LOAD				500	20	1			2	20	500				(E) BOIL RO
(E) BOIL ROOM LOAD				500	20	3			4	20	500				(E) BOIL ROO
(E) BOIL ROOM LOAD - BOILER 1				500	20	5			6	20	500				(E) BOIL ROO
(E) BOIL ROOM LOAD - BOILER 2				500	20	7			8	20	500				(E) BOIL ROO
(E) LOUNGE WIREMOLD PLUGS		1000			20	9			10	20				1200	(E) BUILDING
(E) LIGHTS - K-GART CORR	1200				20	11			12	20				1200	(E) LIGHTS C
(E) LIGHTS EAST - K-GART CLASS	1200				20	13			14	20	500				(E) HANDICA
(E) LIGHTS WRK RM, BTHRM, ENT CAN	1200				20	15			16	20			720		(E) K-GART E
(E) LIGHTS WEST - K-GART CLASS	1200				20	17			18	20					SPARE
(E) CP-5				100	20	19			20	20	900				
(E) LOAD				250	20	21			22		900				
NEW GFCI CB - WATER COOLER				575	20	23			24	20					SPARE
SPACE						25			26	20					SPARE
SPACE						27			28						SPACE
SPACE						29			30						SPACE
		CONNEC	TED LOAD				DE	MAN	D			DEMAN	ID LOAD		1
LOAD TYPE	L1		L2	TOTAL			FA	сто	र		L1		L2	TOTAL	-
LIGHTING LOAD (VA)	3600		3600	7200				1.25			4500		4500	9000	
RECEPTACLE LOAD (VA)	1000		720	1720		1.00	(FI	RST 1	OKVA)		1000		720	1720	RECEPTACL
		Amou	nt over 10kVA	0		0.5	50 (	> 10k	(VA)		0		0	0	ARTICLE 22
CONTINUOUS LOAD (VA)	0		0	0				1.00			0		0	0	1
NON-CONTINUOUS (VA)	3650	1	3575	7225				1.00			3650		3575	7225	1
TOTAL LOAD (KVA)	8.25	1	7.90	16.15	125% C	of ligh	HT/	CON	TAND	RECEPT	9.15		8.80	17.95	1
	68.8		65.8	77.6	(<10KV	A) LO	AD	PLUS	отне		76.3		73.3	86.3	1
MINIMUM FEEDER SIZE (A)	80.2	1	76.7	90.5	< P		c	ARTIC	LE 215	5.2>	87.7		84.2	99.2	1



## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### ▲ DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

#### Image: Mew work keyed notes

- 1. NOT USED.
- 2. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND NEW BRANCH CIRCUIT WIRING TO PANEL, AS INDICATED. ROUTING OF NEW 3/4" CONDUIT SHALL BE DETERMINED IN FIELD. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

KEY PLAN





# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



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## Anchor Bay Schools Naldrett Elementary Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL PLAN











# ANCHOR BAY SCHOOL DISTRICT

# MIDDLE SCHOOL NORTH PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

ARC	CHITECTURAL	MEC	MECHANICAL					
A0.01 A0.02	ARCHITECTURAL REFERENCE SHEET CODE PLAN	M0.00 M1.10	MECHANICAL GENERAL INFORMATION MECHANICAL PLAN	E0.00 E1.10				
A2.10	FLOOR PLAN							



LECTRICAL

ELECTRICAL GENERAL INFORMATION ELECTRICAL PLAN



# FRENCH





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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT



DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC



















TACK BOARDS AND MARKER BOARDS





#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 671. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 143,416 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

MIDDLE SCHOOL NORTH 1) DESIGN CODES

2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING)

NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

 2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
 A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE

ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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L	-
L	-
DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ



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#### PROJECT

Anchor Bay Schools Middle School North Plumbing Upgrades

New Baltimore, Michigan

SHEET CODE PLAN

## PROJECT NUMBER 2025-019 SHEET NUMBER

A0.02







PROPOSED



ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ



#### PROJECT

Anchor Bay Schools Middle School North Plumbing Upgrades

New Baltimore, Michigan

SHEET FLOOR PLAN

PROJECT NUMBER
2025-019
SHEET NUMBER



MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE	
AD	ACCESS DOOR	
AE	AIR EXTRACTOR	
AFF	ABOVE FINISHED FLOOR	
APD	AIR PRESSURE DROP	
ASR	AUTOMATIC SPRINKLER RISER	
BFP	BACKFLOW PREVENTER	
BHP	BRAKE HORSEPOWER	
BTU	BRITISH THERMAL LINIT	
BTUH	BRITISH THERMAL UNITS PER HOUR	
BWV	BACKWATER VALVE	
САР	CAPACITY	
CAV	CONSTANT AIR VOLUME	
CFH	CUBIC FEET PER HOUR	
CFM	CUBIC FEET PER MINUTE	
CIRC	CIRCULATING	
CLG	COOLING	
СО	CLEAN OUT	
CONT	CONTINUATION OR CONTINUED	
CONV	CONVECTOR	
CUH	CABINET UNIT HEATER	
CV	CONTROL VALVE	
DB	DRY BULB IEMPERATURE	
DEG		
DTC	DRAIN TILE CONNECTION	
DWH	DOMESTIC WATER HEATER	
(E)	EXISTING	
EA/EXH	EXHAUST AIR	
EAT	ENTERING AIR TEMPERATURE	
EDB	ENTERING DRY BULB TEMPERATURE	
EF	EXHAUST FAN	
EJ	EXPANSION JOINT	
EL	ELEVATION	
ELECT	ELECTRICAL	
EMS	ENERGY MANAGEMENT SYSTEM	
ESP		
EWC	ELECTRIC WATER COOLER	
°F	DEGREES FAHRENHEIT	
FA	FACE AREA (COIL) / FREE AREA (LOUVER)	
FC	FLEXIBLE CONNECTION	
FD	FLOOR DRAIN	
FDC	FIRE DEPARTMENT CONNECTION	
FH	FIRE HYDRANT	
FHC	FIRE HOSE CABINET	
FHR	FIRE HOSE RACK	
FHV	FIRE HOSE VALVE	
	FULL LOAD AMPS	
	FLOUR	
FFD	FLINNEL FLOOR DRAIN	
FFE	FINISHED FLOOR ELEVATION	
FS	FLOOR SINK	
FT	FEET	
FURN	FURNISHED	
FV	FACE VELOCITY	
FVC	FIRE VALVE CABINET	
GAL	GALLON	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
HB	HUSE BIBB	
HU LLD		
l <sup>111<sup>-</sup></sup>		

MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
HR	HOUR	
HTG	HEATING	
HYD	HYDRANT	
HZ	HERTZ	
ID	INSIDE DIAMETER	
IE	INVERT ELEVATION	
IN	INCHES	
INST	INSTALLED	
INV	INVERT	
ISP	INTERNAL STATIC PRESSURE	
IW	INDIRECT WASTE	
KW	KILOWATT	
LAT	LEAVING AIR TEMPERATURE	
LAV	LAVATORY	
LBS/HR	POUNDS PER HOUR	
LDB	LEAVING DRY BULB TEMPERATURE	
LRA	LOCKED ROTOR AMPS	
LWB	LEAVING WET BULB TEMPERATURE	
MAV	MANUAL AIR VENT	
MAX	MAXIMUM	
МВН	1000 BRITISH THERMAL UNITS PER HOUR	
MCA	MINIMUM CIRCUIT AMPACITY	
MECH	MECHANICAL	
MFR	MANUFACTURER	
MH	MANHOLE	
MIN	MINIMUM	
MISC	MISCELLANEOUS	
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)	
MOP	MAXIMUM OVER-CURRENT PROTECTION	
N.C.	NOISE CRITERIA	
NIC	NOT IN CONTRACT	
NC	NORMALLY CLOSED	
NO	NORMALLY OPEN	
NOM		
	OUTSIDE AIR	
OBD	OPPOSED BLADE DAMPER	
	OUTSIDE DIAMETER	
	OVERELOW ROOF SUMP	
0587	OUTSIDE SCREW AND YOKE	
PD	PRESSURE DROP (FEFT OF WATER)	
PRV	PRESSURE REDUCING VALVE	
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE	
PSIG	POUNDS PER SQUARE INCH – GAUGF	
PT	PRESSURE / TEMPERATURE PORT	
RA	RETURN AIR	
RH	RELATIVE HUMIDITY	
REQD	REQUIRED	
REL.A	RELIEF AIR	
RPM	REVOLUTIONS PER MINUTE	
RPZ	REDUCED PRESSURE ZONE	
RS	ROOF SUMP	
SA	SUPPLY AIR	
SH	SHOWER	
SP	STATIC PRESSURE	
SqFt / SF	SQUARE FOOT/SQUARE FEET	
SS	SERVICE SINK	
TC	TEMPERATURE CONTROL	
Т&Р	TEMPERATURE AND PRESSURE	
TSP	TOTAL STATIC PRESSURE	
TYP	TYPICAL	
UG	UNDERGROUND	
UH	UNIT HEATER	
UL	UNDERWRITERS LABORATORY	
UNO	UNLESS NOTED OTHERWISE	

Μ ABBF W& WE WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_[ \_\_\_\_E \_\_\_\_X $\rightarrow$ \_\_\_> --\_\_\_\_¤ \_\_\_\_/, CHO 6 \_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
-----------------------	------------

REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS			
ABBREV.	DESCRIPTION		
o	PIPE ELBOW UP		
	PIPE ELBOW DOWN		
<del></del>	PIPE TEE DOWN		
	DIRECTION OF FLOW		
	UNION		
	STRAINER		
	CONCENTRIC REDUCER		
	ECCENTRIC REDUCER		
	EXPANSION JOINT		
	FLEXIBLE CONNECTION		
	PIPE ANCHOR		
	PIPE GUIDE		
, M			
	GLUBE VALVE		
	BALL VALVE		
	BUTTERFLY VALVE		
<u>→</u>	BACKWATER VALVE		
<u>k</u>	ANGLE VALVE		
	CHECK VALVE (SWING)		
	CHECK VALVE (SPRING)		
I∕⊽I	PLUG VALVE		
	NEEDLE VALVE		
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)		
↓	PRESSURE REGULATING VALVE		
X	SOLENOID VALVE		
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)		
$\bigcirc$	CENTRIFUGAL FAN		
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE		
	TRAP (PLAN VIEW)		
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)		
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)		
Ô	ROOF SUMP		
——⊖ C0	CLEAN OUT (IN FLOOR)		
//co	CLEAN OUT (IN LINE)		
	CLEAN OUT (WALL)		
BFP	BACKFLOW PREVENTER		
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY		
+	HOSE BIBB, WALL HYDRANT		
	DIRECTION OF PIPE PITCH		
$\odot$	SPRINKLER HEAD (UPRIGHT)		
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)		
—FS	FLOW SWITCH		
<u> </u>	SIAMESE CONNECTION (YARD)		
, ,	SIAMESE CONNECTION (WALL MOUNTED)		
× H	FIRE HYDRANT		
	FLOW MEASURING DEVICE		
<u>≫</u> ⊼	BALANCING VAI VF		
	COMBINATION FLOW MEASURING AND RALANCING DEVICE		
<u>ド</u> 「天MAV			
¥			

MECHANICAL SYMBOLS		
ABBREV.	DESCRIPTION	
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)	
	RECTANGULAR TAKE-OFF (DOUBLE LINE)	
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)	
	ROUND TAKE-OFF (DOUBLE LINE)	
	SPIN-IN FITTING (WITH VOLUME DAMPER)	
	ELBOW (WITH TURNING VANES)	
	RADIUS RECTANGULAR ELBOW	
	RADIUS ROUND ELBOW	
	RECTANGULAR ELBOW UP	
	ROUND ELBOW UP	
	RECTANGULAR ELBOW DOWN	
	ROUND ELBOW DOWN	
	CONCENTRIC TRANSITION (DOUBLE LINE)	
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)	
	ECCENTRIC TRANSITION (DOUBLE LINE)	
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)	
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER	
,−⊋	SUPPLY DIFFUSER	
	LINEAR SLOT DIFFUSER	
$\leftarrow$	RETURN OR EXHAUST GRILLE	
<b></b>	TRANSFER GRILLE	
	CROSS SECTION OF SUPPLY AIR DUCT	
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT	
	EXISTING FIRE DAMPER (HORIZONTAL)	
	EXISTING	
	FIRE DAMPER (VERTICAL) NEW	
<u> </u>	EXISTING SMOKE DAMPER	
	NEW	
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER	
	NEW (HORIZONTAL)	
	VOLUME DAMPER (MANUALLY ADJUSTABLE)	
M	MOTORIZED DAMPER	
SD T	SMOKE DETECTOR	
<u>(C02</u> )	CO2 SENSOR	
(T)	THERMOSTAT OR TEMPERATURE SENSOR	
H	HUMIDISTAT OR HUMIDITY SENSOR	
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW	

	PIPING LEGEND
ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
——F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
F0S	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
——NPCW——	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
——HW——	DOMESTIC HOT WATER PIPING
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
CHWR	CHILLED WATER RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
	HEAT PUMP LOOP RETURN PIPING
	HEAT PUMP LOOP SUPPLY PIPING
	REFRIGERANT LIQUID PIPING
—-кs——	REFRIGERANT SUCTION PIPING
	CEO HEAT EVOLUTION
	GEO HEAT EXCHANCE SUDDLY
NTS	STEAM DIDING
HPS	
	I OW PRESSURE STEAM PIPING
CR	STEAM CONDENSATE RETURN PIPING
	PUMPED STEAM CONDENSATE RETURN PIPING
I PC	LOW PRESSURE CONDENSATE PIPING
HPC	HIGH PRESSURE CONDENSATE PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN GAS PIPING
02	OXYGEN GAS PIPING
	VACUUM PIPING

APPLICABLE CODES AND REGULATIONS		
YEAR	CODE	
2021	MICHIGAN BUILDING CODE	
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS	
2021	MICHIGAN PLUMBING CODE	
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES	
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)	

DRAWING INDEX			
SHT NO	DESCRIPTION		
M0.00	MECH	MECHANICAL GENERAL INFORMATION	
M1.10	MECH	ANICAL PLAN	
	l	DRAWING NOTATION	
SYMB	OL	DESCRIPTION	
(1	$\rangle$	NEW WORK KEY NOTE NO. 1	
$\sum_{1}$	7	DEMOLITION KEY NOTE NO. 1	
<u>EF-</u>	<u>·1</u>	EQUIPMENT TAG	
S-1 10x1 100-	0 •2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10x10$ CFM = $100$ (TYPICAL FOR 2)	
		EXISTING DEVICES OR EQUIPMENT	
		NEW OR MODIFIED DEVICES OR EQUIPMENT	
STING SYSTEM COMPONENT TO BE REMOVED			
POINT OF NEW CONNECTION			
SHEET M5.2 ON WHICH			
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)			
SYSTEM RISER DESIGNATION X-# RISER NUMBER SYSTEM RISER SSANITARY D: DOMESTIC WATER H: HVAC PIPING SP: STAIRWELL PRESSURIZATION V: VENT E: EXHAUST			

ISSUE DATE	ISSUED FOR	
05/08/2025	BIDS	
	KFB	
CHECKED	DGN	
APPROVED		



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Anchor Bay Schools Middle School North Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER



SHEET NUMBER

M0.00

	PLUMBING FIXTURES/SPECIALTIES SCHEDULE											
TAC E	BARRIER		PIPE CONNECTION SIZES			ZES	MANUFACTURER &					
TAG	FREE		WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES				
EWC-1	Y	SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	-	ELKAY: LZS8WSSP—PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS STEEL HINGED DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION (FILTERED).				

NOTES:

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.

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#### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

1. REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN





## FRENCH

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Anchor Bay Schools Middle School North Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL PLAN











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	COPPER FEEDER SCHEDULE							
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

POWER SYMBOL LIST					
SYMBOL	DESCRIPTION				
•	CONDUIT DOWN				
0	CONDUIT UP				
4	DISCONNECT SWITCH - NON FUSED				
L	DISCONNECT SWITCH - FUSED				
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER				
	ELECTRICAL PANEL				
$\bullet$	GROUNDING ROD				
Ē	GROUND				
<del></del>	GROUNDING BAR				
J	JUNCTION BOX				
Μ	METER				
$\mathcal{N}$	MOTOR – SINGLE PHASE				
$\mathbf{V}$	MOTOR – THREE PHASE				
\$м	MOTOR RATED SWITCH				
φ	POWER RECEPTACLE – SIMPLEX TYPE				
φ	POWER RECEPTACLE – DUPLEX TYPE				
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER				
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE				
+	POWER RECEPTACLE – QUADRUPLEX TYPE				
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE				
PT	POWER RECEPTACLE – POKE THRU TYPE				
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE				
TC	TIME CLOCK				
Т	TRANSFORMER				
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS				

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST						
SYMBOL	DESCRIPTION					
F	AUDIBLE DEVICE/WALL MOUNTED					
F	VISUAL DEVICE/WALL MOUNTED					
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED					
F	AUDIBLE DEVICE/CEILING MOUNTED					
Ē	VISUAL DEVICE/CEILING MOUNTED					
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED					
¢\$	CO ALARM/SMOKE DETECTOR					
Ś	SMOKE DETECTOR					
Ô	CO ALARM					
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR					
H	HEAT DETECTOR					
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET					
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)					
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)					
F	MANUAL PULL STATION					
FS	FLOW SWITCH					
TS	TAMPER SWITCH					
FAA	FIRE ALARM ANNUNCIATOR PANEL					
FACP	FIRE ALARM CONTROL PANEL					
1/0	INPUT/OUTPUT CONTROL MODULE					
NOTES: 1. DRAWINGS	<u>NOTES:</u> I. DRAWINGS INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND					

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELECTRICAL ABBREVIATIONS						
ABBREV.	DESCRIPTION					
AFF	ABOVE FINISHED FLOOR					
A	AMPERE					
AF	AMPERE FUSE/AMPERE FRAME					
AWG	AMERICAN WIRE GAUGE					
AT	AMPERE TRIP					
ATS	AUTOMATIC TRANSFER SWITCH					
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)					
С	CONDUIT OR CEILING MOUNTED					
СВ	CIRCUIT BREAKER					
CL	CONTROL LOAD					
CU	COPPER					
СТ	CURRENT TRANSFORMER					
DIA	DIAMETER					
DISC	DISCONNECT					
EMT	ELECTRICAL METALLIC TUBING					
EWC	ELECTRIC WATER COOLER					
EPO	EMERGENCY POWER OFF					
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK					
FA	FIRE ALARM					
FACP	FIRE ALARM CONTROL PANEL					
FLA	FULL LOAD AMPS					
F	FUSE					
G/GRD	GROUND					
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER					
HOA	HAND-OFF-AUTO					
HP	HORSEPOWER					
IG	ISOLATED GROUND					
KV	KILOVOLT					
KVA	KILOVOLT AMPERE					
KW	KILOWATT					
KWH	KILOWATT HOUR					
LP	LIGHTING PANEL					
MCB	MAIN CIRCUIT BREAKER					
MDP	MAIN DISTRIBUTION PANEL					
MLO	MAIN LUG ONLY					
MAX	MAXIMUM					
MIN	MINIMUM					
NEC	NATIONAL ELECTRICAL CODE					
	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.					
N/NEU	NEUTRAL					
NF	NON-FUSIBLE					
NC						
NU						
P	POLE					
PF	POWER FACTOR					
PVC	POLYVINYL CHLORIDE (PLASTIC)					
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT					
(RR)	REMOVE AND REINSTALL					
RMC	RIGID METALLIC CONDUIT					
RP	RECEPTACLE PANEL					
TBB	TELEPHONE BACKBOARD					
TYP.	TYPICAL					
UC	UNDER COUNTER					
UL	UNDERWRITERS LABORATORIES					
UPS	UNINTERRUPTIBLE POWER SUPPLY					
USB	UNIVERSAL SERIAL BUS					
V	VOLT					
VA	VOLT AMPERE					
W	WATT					
WG	WIRE GUARD					
WP	WEATHERPROOF					
XFMR	TRANSFORMER					

#### DRAWING INDEX

DESCRIPTION

SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
E1.10	ELECTRICAL PLAN

DRAWING NOTATION					
SYMBOL	DESCRIPTION				
L1	LIGHTING FIXTURE TAG				
	CONSTRUCTION KEY NOTE NUMBER 1				
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1				
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)				
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)				
EQUIPMENT	EQUIPMENT TAG				
	EXISTING DEVICES OR EQUIPMENT				
	NEW OR MODIFIED DEVICES OR EQUIPMENT				
	NEW OR MODIFIED UNDERGROUND WIRING				
	EXISTING SYSTEM COMPONENT TO BE REMOVED				
Ð	POINT OF NEW CONNECTION				
	-SECTION NUMBER 4				

SHEET E5.2 ON WHICH SECTION IS DRAWN
SECTION NO. 6
E5.2 SCALE: $1/4" = 1' - 0"$
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG
LIGHTING CONTROL SPACE TYPE '1'
DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.

APPLICABLE CODES AND REGULATIONS						
ſEAR	CODE					
2021	MICHIGAN BUILDING CODE					
2015	MICHIGAN ENERGY CODE					
2015	MICHIGAN RESIDENTIAL CODE					
2015	MICHIGAN REHABILITATION CODE					
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8					
2023	NATIONAL ELECTRICAL CODE (NFPA 70)					
2013	NFPA 20					
2013	NFPA 72					
2013	NFPA 101					
2013	NFPA 110					
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES					
985	DETROIT ELEVATOR CODE					

ISSUE DATE ISSUED FOR BIDS 05/08/2025 DRAWN CHECKED RWC APPROVED SET

KEY PLAN



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# Anchor Bay Schools Middle School North Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



SHEET NUMBER







## ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### ▲ DEMOLITION KEYED NOTES

 ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

### (#) <u>NEW WORK KEYED NOTES</u>

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.







# FRENCH

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Anchor Bay Schools Middle School North Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL PLAN











1/2" 1" 2

# ANCHOR BAY SCHOOL DISTRICT

# MIDDLE SCHOOL SOUTH PLUMBING UPGRADES NEW BALTIMORE, MICHIGAN PROJECT NO. 2025-019

MAY 8, 2025

BIDS

# LIST OF DRAWINGS

ARC	CHITECTURAL	MEC	MECHANICAL		
A0.01 A0.02	ARCHITECTURAL REFERENCE SHEET CODE PLAN	M0.00 M1.10	MECHANICAL GENERAL INFORMATION MECHANICAL PLAN	E0.00 E1.10	
A2.10	FLOOR PLAN				



LECTRICAL

ELECTRICAL GENERAL INFORMATION ELECTRICAL PLAN









REFERENCE LOCATION MAP



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## MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contras	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HOI LONG LEG VEF LINEAR METAL LOCATION(S) LOW POINT
ASPH AV L BCMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB	ASPHALT AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET	MANUF MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MISC ML MP MWP MO MET/MTL MSF MT	MANUFACTUR MARBLE THRE MARKER BOAF MASONRY MATERIAL/MAT MAKE UP AIR U MAXIMUM MECHANICAL MECHANICAL MEZZANINE MINIMUM/MINU MISCELLANEO MASONRY LINT METAL PANEL METAL WALL F MASONRY OPE METAL METAL STUD F
CB CEM CER CFM CJ CL CLG	CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING	NIC NO/# NOM NSF NTS	NOT IN CONTR NUMBER NOMINAL NON-SLIP FINIS NOT TO SCALE
CLR CMU COL COMP CONC CONST CONT	CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION CONTINUOUS/CONTINUE	OC OD OHD OPNG OPP OS	ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW SU
CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMIN PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CH
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) ELEVATOR EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REFR REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATC REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE M ROUGH OPENI RIGHT OF WAY ROOF TOP UNI ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SE SECTION STOREFRONT SHEET SIMILAR SPECIFICATIO SPLIT FACE CM SPORTS IMPAG SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFAC STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL T SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TC TEMP TER TOC TOF TOM TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOTI TOP OF MASO TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILAT
JS I JT KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPO VINYL COVERE VERTICAL VERIFY IN FIEL VERTICAL UNI
		W/ W/O	WITH WITHOUT



DRAWING SYMBOL

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL METAL WALL PANEL

MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE

PREFABRICATED PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH

POLYVINYL CHLORIDE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC



















TACK BOARDS AND MARKER BOARDS





#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- STUDENT OCCUPANT LOAD IS 510. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS NOT SPRINKLED.
- 5. EXISTING BUILDING IS 1 STORY.
- 6. EXISTING FLOOR AREA: 177,201 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

MIDDLE SCHOOL NORTH

- 1) DESIGN CODES
- 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING) NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE
- 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
- 2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
   A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

ISSUE DATE ISSUED FOR BIDS 05/08/2025 -----------KPK DRAWN CAW CHECKED DCJ APPROVED



#### PROJECT

Anchor Bay Schools Middle School South Plumbing Upgrades

New Baltimore, Michigan

SHEET CODE PLAN

PROJECT NUMBER



SHEET NUMBER A0.02





 $\frac{C}{A2.10} = \frac{ELEVATION C}{SCALE: 1/4" = 1'-0"}$ 



NOTE: PROVIDE SS PLATE LARGE ENOUGH TO COVER REMOVED FIXTURE LOCATIONS

PROPOSED





- EXISTING CMU

- STAINLESS PLATE -COORDINATE SIZE IN FIELD - ELEC WATER COOLER/BOTTLE FILLERS - REFER TO MECH - EXISTING CMU GLAZED WALL BASE



KEY PLAN

- STAINLESS PLATE -COORDINATE SIZE - ELEC WATER COOLER/BOTTLE FILLER - REFER TO MECH EXISTING GLAZED WALL BASE

PROPOSED





ISSUE DATE	ISSUED FOR
05/08/2025	BIDS
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DRAWN	КРК
CHECKED	CAW
APPROVED	DCJ



PROJECT

Anchor Bay Schools Middle School South Plumbing Upgrades

New Baltimore, Michigan

SHEET FLOOR PLAN

PROJECT NUMBER



SHEET NUMBER A2.10

MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE	
AD	ACCESS DOOR	
AE	AIR EXTRACTOR	
AFF	ABOVE FINISHED FLOOR	
APD	AIR PRESSURE DROP	
ASR	AUTOMATIC SPRINKLER RISER	
BFP	BACKFLOW PREVENTER	
BHP	BRAKE HORSEPOWER	
BTU	BRITISH THERMAL LINIT	
BTUH	BRITISH THERMAL UNITS PER HOUR	
BWV	BACKWATER VALVE	
САР	CAPACITY	
CAV	CONSTANT AIR VOLUME	
CFH	CUBIC FEET PER HOUR	
CFM	CUBIC FEET PER MINUTE	
CIRC	CIRCULATING	
CLG	COOLING	
СО	CLEAN OUT	
CONT	CONTINUATION OR CONTINUED	
CONV	CONVECTOR	
CUH	CABINET UNIT HEATER	
CV	CONTROL VALVE	
DB	DRY BULB IEMPERATURE	
DEG		
DTC	DRAIN TILE CONNECTION	
DWH	DOMESTIC WATER HEATER	
(E)	EXISTING	
EA/EXH	EXHAUST AIR	
EAT	ENTERING AIR TEMPERATURE	
EDB	ENTERING DRY BULB TEMPERATURE	
EF	EXHAUST FAN	
EJ	EXPANSION JOINT	
EL	ELEVATION	
ELECT	ELECTRICAL	
EMS	ENERGY MANAGEMENT SYSTEM	
ESP		
EWC	ELECTRIC WATER COOLER	
°F	DEGREES FAHRENHEIT	
FA	FACE AREA (COIL) / FREE AREA (LOUVER)	
FC	FLEXIBLE CONNECTION	
FD	FLOOR DRAIN	
FDC	FIRE DEPARTMENT CONNECTION	
FH	FIRE HYDRANT	
FHC	FIRE HOSE CABINET	
FHR	FIRE HOSE RACK	
FHV	FIRE HOSE VALVE	
	FULL LOAD AMPS	
	FLOUR	
FFD	FLINNEL FLOOR DRAIN	
FFE	FINISHED FLOOR ELEVATION	
FS	FLOOR SINK	
FT	FEET	
FURN	FURNISHED	
FV	FACE VELOCITY	
FVC	FIRE VALVE CABINET	
GAL	GALLON	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
HB	HUSE BIBB	
HU LLD		
l <sup>111<sup>-</sup></sup>		

MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
HR	HOUR	
HTG	HEATING	
HYD	HYDRANT	
HZ	HERTZ	
ID	INSIDE DIAMETER	
IE	INVERT ELEVATION	
IN	INCHES	
INST	INSTALLED	
INV	INVERT	
ISP	INTERNAL STATIC PRESSURE	
IW	INDIRECT WASTE	
KW	KILOWATT	
LAT	LEAVING AIR TEMPERATURE	
LAV	LAVATORY	
LBS/HR	POUNDS PER HOUR	
LDB	LEAVING DRY BULB TEMPERATURE	
LRA	LOCKED ROTOR AMPS	
LWB	LEAVING WET BULB TEMPERATURE	
MAV	MANUAL AIR VENT	
MAX	MAXIMUM	
МВН	1000 BRITISH THERMAL UNITS PER HOUR	
MCA	MINIMUM CIRCUIT AMPACITY	
MECH	MECHANICAL	
MFR	MANUFACTURER	
MH	MANHOLE	
MIN	MINIMUM	
MISC	MISCELLANEOUS	
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)	
MOP	MAXIMUM OVER-CURRENT PROTECTION	
N.C.	NOISE CRITERIA	
NIC	NOT IN CONTRACT	
NC	NORMALLY CLOSED	
NO	NORMALLY OPEN	
NOM		
	OUTSIDE AIR	
OBD	OPPOSED BLADE DAMPER	
	OUTSIDE DIAMETER	
	OVERELOW ROOF SUMP	
0587	OUTSIDE SCREW AND YOKE	
PD	PRESSURE DROP (FEFT OF WATER)	
PRV	PRESSURE REDUCING VALVE	
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE	
PSIG	POUNDS PER SQUARE INCH – GAUGF	
PT	PRESSURE / TEMPERATURE PORT	
RA	RETURN AIR	
RH	RELATIVE HUMIDITY	
REQD	REQUIRED	
REL.A	RELIEF AIR	
RPM	REVOLUTIONS PER MINUTE	
RPZ	REDUCED PRESSURE ZONE	
RS	ROOF SUMP	
SA	SUPPLY AIR	
SH	SHOWER	
SP	STATIC PRESSURE	
SqFt / SF	SQUARE FOOT/SQUARE FEET	
SS	SERVICE SINK	
TC	TEMPERATURE CONTROL	
Т&Р	TEMPERATURE AND PRESSURE	
TSP	TOTAL STATIC PRESSURE	
TYP	TYPICAL	
UG	UNDERGROUND	
UH	UNIT HEATER	
UL	UNDERWRITERS LABORATORY	
UNO	UNLESS NOTED OTHERWISE	

Μ ABBF W& WE WC WG WH

# ABB \_\_\_\_\_ -----\_\_\_\_ \_\_\_\_E \_\_\_\_X $\rightarrow$ \_\_\_> --\_\_\_\_¤ \_\_\_\_/*/* CHO 6 \_\_\_\_ н

<b>IECHANICAL ABB</b>	REVIATIONS
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REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS		
ABBREV.	DESCRIPTION	
o	PIPE ELBOW UP	
	PIPE ELBOW DOWN	
<del></del>	PIPE TEE DOWN	
	DIRECTION OF FLOW	
	UNION	
	STRAINER	
	CONCENTRIC REDUCER	
	ECCENTRIC REDUCER	
	EXPANSION JOINT	
	FLEXIBLE CONNECTION	
	PIPE ANCHOR	
	PIPE GUIDE	
, M		
	GLUBE VALVE	
	BALL VALVE	
	BUTTERFLY VALVE	
<u>→</u>	BACKWATER VALVE	
<u>k</u>	ANGLE VALVE	
	CHECK VALVE (SWING)	
	CHECK VALVE (SPRING)	
I∕⊽I	PLUG VALVE	
	NEEDLE VALVE	
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)	
↓	PRESSURE REGULATING VALVE	
X	SOLENOID VALVE	
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)	
$\bigcirc$	CENTRIFUGAL FAN	
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE	
	TRAP (PLAN VIEW)	
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)	
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)	
Ô	ROOF SUMP	
——⊖ C0	CLEAN OUT (IN FLOOR)	
//co	CLEAN OUT (IN LINE)	
	CLEAN OUT (WALL)	
BFP	BACKFLOW PREVENTER	
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY	
+	HOSE BIBB, WALL HYDRANT	
	DIRECTION OF PIPE PITCH	
$\odot$	SPRINKLER HEAD (UPRIGHT)	
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)	
—FS	FLOW SWITCH	
<u> </u>	SIAMESE CONNECTION (YARD)	
, ,	SIAMESE CONNECTION (WALL MOUNTED)	
× H	FIRE HYDRANT	
	FLOW MEASURING DEVICE	
<u>≫</u> ⊼	BALANCING VAI VF	
	COMBINATION FLOW MEASURING AND RALANCING DEVICE	
<u>- ド</u> 「天 MAV		
¥		

MECHANICAL SYMBOLS		
ABBREV.	DESCRIPTION	
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)	
	RECTANGULAR TAKE-OFF (DOUBLE LINE)	
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)	
	ROUND TAKE-OFF (DOUBLE LINE)	
	SPIN-IN FITTING (WITH VOLUME DAMPER)	
	ELBOW (WITH TURNING VANES)	
	RADIUS RECTANGULAR ELBOW	
	RADIUS ROUND ELBOW	
	RECTANGULAR ELBOW UP	
	ROUND ELBOW UP	
	RECTANGULAR ELBOW DOWN	
	ROUND ELBOW DOWN	
	CONCENTRIC TRANSITION (DOUBLE LINE)	
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)	
	ECCENTRIC TRANSITION (DOUBLE LINE)	
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)	
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER	
,−⊋	SUPPLY DIFFUSER	
	LINEAR SLOT DIFFUSER	
$\leftarrow$	RETURN OR EXHAUST GRILLE	
<b></b>	TRANSFER GRILLE	
	CROSS SECTION OF SUPPLY AIR DUCT	
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT	
	EXISTING FIRE DAMPER (HORIZONTAL)	
	EXISTING	
	FIRE DAMPER (VERTICAL) NEW	
<u> </u>	EXISTING SMOKE DAMPER	
	NEW	
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER	
	NEW (HORIZONTAL)	
	VOLUME DAMPER (MANUALLY ADJUSTABLE)	
M	MOTORIZED DAMPER	
SD T	SMOKE DETECTOR	
<u>(C02</u> )	CO2 SENSOR	
(T)	THERMOSTAT OR TEMPERATURE SENSOR	
H	HUMIDISTAT OR HUMIDITY SENSOR	
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW	

	PIPING LEGEND
ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
——F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
F0S	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
——HW——	DOMESTIC HOT WATER PIPING
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
CHWR	CHILLED WATER RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
	HEAT PUMP LOOP RETURN PIPING
	HEAT PUMP LOOP SUPPLY PIPING
	REFRIGERANT LIQUID PIPING
—-кs——	REFRIGERANT SUCTION PIPING
	CEO HEAT EVOLUTION
	GEO HEAT EXCHANCE SUDDLY
NTS	STEAM DIDING
HPS	
	I OW PRESSURE STEAM PIPING
CR	STEAM CONDENSATE RETURN PIPING
	PUMPED STEAM CONDENSATE RETURN PIPING
I PC	LOW PRESSURE CONDENSATE PIPING
HPC	HIGH PRESSURE CONDENSATE PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN GAS PIPING
02	OXYGEN GAS PIPING
	VACUUM PIPING

	APPLICABLE CODES AND REGULATIONS
YEAR	CODE
2021	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2021	MICHIGAN PLUMBING CODE
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES
-	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)

DRAWING INDEX			
SHT NO		DESCRIPTION	
M0.00	MECH	MECHANICAL GENERAL INFORMATION	
M1.10	MECH	ANICAL PLAN	
	[	DRAWING NOTATION	
SYMB	OL	DESCRIPTION	
(1	$\rangle$	NEW WORK KEY NOTE NO. 1	
$\int_{1}$	7	DEMOLITION KEY NOTE NO. 1	
<u>EF–</u>	<u>·1</u>	EQUIPMENT TAG	
S-1 10x1 100-	0 •2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10 \times 10$ CFM = $100$ (TYPICAL FOR 2) $S = SUPPLY$ $R = RETURNE = EXHAUSTT = TRANSFER$	
		EXISTING DEVICES OR EQUIPMENT	
		NEW OR MODIFIED DEVICES OR EQUIPMENT	
<del>\ / /</del>	<del>/ / \</del>	EXISTING SYSTEM COMPONENT TO BE REMOVED	
		POINT OF NEW CONNECTION	
SHEET M5.2 ON WHICH			
6 M5.2 SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)			
SYSTEM RISER DESIGNATION X-# RISER NUMBER SP: STAIRWELL PRESSURIZATION V: VENT E: EXHAUST			

ISSUE DATE	ISSUED FOR	
05/08/2025	BIDS	
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DRAWN	RFB	
CHECKED	DGN	
APPROVED		

KEY PLAN



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Anchor Bay Schools Middle School South Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER



SHEET NUMBER

M0.00



	PIPE	E CONNE	CTION SIZ	ES	MANUFACTURER &	٨٥٦٢٩٩٩		
WAS	STE	VENT	CW	HW	MODEL NO.	ACCESSORIES		
1-1,	/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP–PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS STEEL HINGED DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION (FILTERED).		

#### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

#

 REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL - COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.

KEY PLAN





## FRENCH

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Anchor Bay Schools Middle School South Plumbing Upgrades

New Baltimore, Michigan

SHEET MECHANICAL PLAN









COPPER FEEDER SCHEDULE								
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	30N	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

POWER SYMBOL LIST				
SYMBOL	DESCRIPTION			
•	CONDUIT DOWN			
0	CONDUIT UP			
4	DISCONNECT SWITCH - NON FUSED			
L	DISCONNECT SWITCH - FUSED			
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER			
	ELECTRICAL PANEL			
$\bullet$	GROUNDING ROD			
Ē	GROUND			
<del></del>	GROUNDING BAR			
J	JUNCTION BOX			
Μ	METER			
$\mathcal{N}$	MOTOR – SINGLE PHASE			
$\mathbf{V}$	MOTOR – THREE PHASE			
\$м	MOTOR RATED SWITCH			
φ	POWER RECEPTACLE – SIMPLEX TYPE			
φ	POWER RECEPTACLE – DUPLEX TYPE			
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER			
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE			
+	POWER RECEPTACLE – QUADRUPLEX TYPE			
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE			
PT	POWER RECEPTACLE – POKE THRU TYPE			
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE			
TC	TIME CLOCK			
Т	TRANSFORMER			
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS			

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST				
SYMBOL	DESCRIPTION			
FA	AUDIBLE DEVICE/WALL MOUNTED			
F	VISUAL DEVICE/WALL MOUNTED			
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED			
F	AUDIBLE DEVICE/CEILING MOUNTED			
Ē	VISUAL DEVICE/CEILING MOUNTED			
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED			
¢\$	CO ALARM/SMOKE DETECTOR			
Ś	SMOKE DETECTOR			
Ô	CO ALARM			
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR			
H	HEAT DETECTOR			
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET			
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)			
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)			
F	MANUAL PULL STATION			
FS	FLOW SWITCH			
TS	TAMPER SWITCH			
FAA	FIRE ALARM ANNUNCIATOR PANEL			
FACP	FIRE ALARM CONTROL PANEL			
1/0	INPUT/OUTPUT CONTROL MODULE			
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND			

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELECTRICAL ABBREVIATIONS				
ABBREV.	DESCRIPTION			
AFF	ABOVE FINISHED FLOOR			
A	AMPERE			
AF	AMPERE FUSE/AMPERE FRAME			
AWG	AMERICAN WIRE GAUGE			
AT	AMPERE TRIP			
ATS	AUTOMATIC TRANSFER SWITCH			
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)			
С	CONDUIT OR CEILING MOUNTED			
СВ	CIRCUIT BREAKER			
CL	CONTROL LOAD			
CU	COPPER			
CT	CURRENT TRANSFORMER			
DIA	DIAMETER			
DISC	DISCONNECT			
EMT	ELECTRICAL METALLIC TUBING			
EWC	ELECTRIC WATER COOLER			
EPO	EMERGENCY POWER OFF			
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK			
FA				
F LA	FUSE			
G / GRD				
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER			
НОА	HAND-OFF-AUTO			
HP	HORSEPOWER			
IG	ISOLATED GROUND			
KV	KILOVOLT			
KVA	KILOVOLT AMPERE			
KW	KILOWATT			
KWH	KILOWATT HOUR			
LP	LIGHTING PANEL			
MCB	MAIN CIRCUIT BREAKER			
MDP	MAIN DISTRIBUTION PANEL			
MLO	MAIN LUG ONLY			
MAX	MAXIMUM			
MIN				
	NATIONAL ELECTRICAL CODE			
	NELITRAL			
NF				
NC	NORMALLY CLOSED			
NO	NORMALLY OPEN			
NIC	NOT IN CONTRACT			
PH. OR Ø	PHASE			
Р	POLE			
PF	POWER FACTOR			
PVC	POLYVINYL CHLORIDE (PLASTIC)			
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT			
(RR)	REMOVE AND REINSTALL			
RMC	RIGID METALLIC CONDUIT			
RP	RECEPTACLE PANEL			
TBB	TELEPHONE BACKBOARD			
TYP.				
UC				
UL				
UPS				
028	UNIVERSAL SERIAL BUS			
ν \/Δ	VOLT AMPERE			
W	WATT			
WG	WIRE GUARD			
WP	WEATHERPROOF			
XFMR	TRANSFORMER			

#### DRAWING INDEX

DESCRIPTION

SHT NO

0.00 El	LECTRICAL	GENERAL	INFORMATION
1.10 El	LECTRICAL	PLAN	

DRAWING NOTATION				
SYMBOL	DESCRIPTION			
L1	LIGHTING FIXTURE TAG			
	CONSTRUCTION KEY NOTE NUMBER 1			
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1			
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)			
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)			
QUIPMENT	EQUIPMENT TAG			
	EXISTING DEVICES OR EQUIPMENT			
	NEW OR MODIFIED DEVICES OR EQUIPMENT			
	NEW OR MODIFIED UNDERGROUND WIRING			
	EXISTING SYSTEM COMPONENT TO BE REMOVED			
Ð	POINT OF NEW CONNECTION			
	-SECTION NUMBER 4			

E5.2				
SHEET E5.2 ON WHICH SECTION IS DRAWN				
SECTION NO. 6				
<u>SECTION</u>				
E5.2 SCALE: $1/4" = 1' - 0"$				
SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)				
LIGHTING CONTROL TAG				
LIGHTING CONTROL				
SPACE TYPE 1 DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)				
NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.				

APPLICABLE CODES AND REGULATIONS				
YEAR	CODE			
2021	MICHIGAN BUILDING CODE			
2015	MICHIGAN ENERGY CODE			
2015	MICHIGAN RESIDENTIAL CODE			
2015	MICHIGAN REHABILITATION CODE			
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8			
2023	NATIONAL ELECTRICAL CODE (NFPA 70)			
2013	NFPA 20			
2013	NFPA 72			
2013	NFPA 101			
2013	NFPA 110			
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES			
985	DETROIT ELEVATOR CODE			

ISSUE DATE	ISSUED FOR
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CHECKED	RWC
APPROVED	SET



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Anchor Bay Schools Middle School South Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



E0.00





Panel Designation: (E) RP-EG5A							Main: 250A MLO								P-P Voltage: 208			
Panel Location	Bussing: 250A								P-N Voltage: 120									
Fed Fro	Ground Bus: STANDARD Mounting: SURFACE								Phase: 3 Wire: 4									
Feeder Siz																		
							Neutral: 100%						Min SC Interrupting Rating: 10,000					
Remarks	Light	Recept	Cont Load	nonC Load	OC Prot		Ø	ØØØ		_	ос	nonC	Cont	Recept	Light			
	Load	Load				CKT	A	в	c  <sup>C</sup>	кт	Prot	Load	Load	Load	Load	Remarks		
(E) FCU-2 & HUV-1 - RM 205				1000	20	1	X			2	20	200				NACP 1&6		
(E) ACCU-2				2600	30	3		X		4	20			1000		(E) RECEPT - AREA B1 RM 118		
				2600	7	5			X	6	20			1000		(E) RECEPT - AREA B1 RM 117		
(E) FCU-1				1000	20	7	X			8	20			1000		(E) RECEPT - AREA B1 RM 116		
(E) ACCU-1				1000	20	9	X	Х	1	0	20			1000		(E) RECEPT - AREA B1 RM 114		
				1000		11			X 1	2	20			1000		(E) RECEPT - AREA B1 RM 106		
FCU-3 & HUV-1				1000	20	13	X		1	4	20			1000		(E) RECEPT - AREA B1 RM 104 II		
(E) ACCU-3				2600	30	15		X	1	6	20	1150				NEW GFCI CB - (2) WATER COO		
				2600		17			X   1	8	20	1150				NEW GFCI CB - (2) WATER COO		
(E) ACCU-5				3600	40	19	X		2	20	20	1150				NEW GFCI CB - (2) WATER COO		
				3600		21		X	2	22	20					SPARE		
(E) ACCU-6				3600	40	23			X   2	24	20					SPARE		
				3600		25	X		1	26	20					SPARE		
(E) RECEPT - AREA B1 RMS 114,110,115		1000			20	27		X	1	28	20					SPARE		
(E) RECEPT - AREA B1 RMS 121,112,122		1000			20	29		, i	X 3	30	20					SPARE		
(E) RECEPT - AREA A1 RMS 124,120,128		1000			20	31	X			32	20					SPARE		
SPARE					20	33		X	3	84	20					SPARE		
SPARE					20	35			X 3	36	20					SPARE		
SPARE					20	37	x		3	88	20					SPARE		
SPARE					20	39		x		ю	20					SPARE		
SPARE					20	41			x 4	12	20					SPARE		
Connected Load							Demand						Demana	Load	7			
Load Description	ØA ØB ØC Toto					- Factor						ØA ØB		ØC	Total	1		
Lighting or Continous Load (Volt-Amps)	0	0	0	0	1.25						0	0	0	0				
180VA Receptacle Load (Volt-Amps)	3000	3000 3000 3000 9000				1.00 (First 10kVA)						3000	3000	3000	9000	Receptacle Demand Facto		
	Am	Amount over 10kVA 0			0.50 (> 10kVA)							0	0	0	0	220.44 of the National Elect		
Continuous Load (Volt-Amps)	0	0	0	0	1.25							0	0	0	0	1		
Non-Continuous Load (Volt-Amps)	11550	10950	10950	33450	1.00						11550	10950	10950	33450	1			
Total Load (kVA)	14.55	13.95	13.95	42.45	125% of Light/Cont and Recept						ecept	14.55	13.95	13.95	42.45	1		
Total Ampacity (Amps)	121.2	116.2	116.2	117.8	(<10kVA) load plus other load						load	121.2	116.2	116.2	117.8	1		
Minimum Feeder Sizing (Amps)	127.4	122.4	122.4	124.1	<pre> per NEC Article 215.2&gt;</pre>						, 、	127 /	122/	122.4	1241	1		



r per Article rical Code.

### ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- 3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.
- $\mathbb{A}$

#### DEMOLITION KEYED NOTES

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### **NEW POWER GENERAL NOTES**

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

#### $\langle \# \rangle$ NEW WORK KEYED NOTES

- 1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.
- 2. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND NEW BRANCH CIRCUIT WIRING TO PANEL, AS INDICATED. ROUTING OF NEW 3/4" CONDUIT SHALL BE DETERMINED IN FIELD. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.

KEY PLAN





# FRENCH

2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



Strategic Energy Solutions<sup>®</sup> 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com (C) 2025 SES, INC. SES Project #23 0019 01 PROJECT

## Anchor Bay Schools Middle School South Plumbing Upgrades

New Baltimore, Michigan

SHEET ELECTRICAL PLAN

#### PROJECT NUMBER






# ANCHOR BAY SCHOOL DISTRICT

# ANCHOR BAY HIGH SCHOOL PLUMBING UPGRADES FAIR HAVEN, MICHIGAN 2025-019 PROJECT NO.

MAY 08, 2025

BIDS

# LIST OF DRAWINGS

#### ARCHITECTURAL

A0.01 ARCHITECTURAL REFERENCE SHEET A0.02A LOWER LEVEL, FIRST FLOOR CODE PLANS

A2.02B SECOND FLOOR CODE PLAN A2.10 LOWER LEVEL, FIRST FLOOR PLANS

SECOND FLOOR PLAN A2.11

#### MECHANICAL

M0.00 MECHANICAL GENERAL INFORMATION M1.00 LOWER LEVEL MECHANICAL PLAN

M1.10 FIRST FLOOR MECHANICAL PLAN M1.20 SECOND FLOOR MECHANICAL PLAN E0.00 E1.00 E1.10 E1.20



ELECTRICAL

ELECTRICAL GENERAL INFORMATION LOWER LEVEL ELECTRICAL PLAN FIRST FLOOR ELECTRICAL PLAN SECOND FLOOR ELECTRICAL PLAN







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#### MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
2020202 2020202	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
entre classes Alles contais	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
A A A	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

#### ABBREVIATIONS

AC ACOUST ACT ADA ADJ AFF AGG ALT AL/ALUM ANOD APC APPROX ARCH	AIR CONDITIONING ACOUSTICAL ACOUSTICAL CEILING TILE AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED FLOOR AGGREGATE ALTERNATE ALUMINUM ANODIZED ARCHITECTURAL PRECAST LINTEL APPROXIMATE ARCHITECT(URAL)	L LAM LAV LB/# LGF LIN LKR LLH LLV LMC LOC LP	LENGTH LAMINATE(D) LAVATORY POUND LIGHT GAUGE LINOLEUM LOCKER LONG LEG HO LONG LEG VE LINEAR METAI LOCATION(S) LOW POINT
AV L B CMU BIT BD BF BLDG BLK BLKG BM BOT BRG BUR CAB CUH CB CEM	AUDIO/VISUAL ANGLE BURNISHED CMU BITUMINOUS BOARD BARRIER FREE BUILDING BLOCK BLOCKING BENCH MARK/BEAM BOTTOM BEARING BUILT-UP ROOF CABINET CABINET CABINET UNIT HEATER CHALKBOARD/CATCH BASIN CEMENT	MAR MB MAS MAT MAU MAZ MECH MEZZ MIN MISC ML MP MWP MO MET/MTL MSF MT	MARGI ACTOR MARBLE THRE MARKER BOAI MASONRY MATERIAL/MA MAKE UP AIR MAXIMUM MECHANICAL MECHANICAL MEZANINE MINIMUM/MINI MISCELLANEC MASONRY LIN METAL PANEL METAL VALL I METAL STUD I METAL STUD I METAL THRES NOT IN CONTE
CER CFM CJ CL CLG CLR CMU COL COMP CONC CONST	CERAMIC CUBIC FEET PER MINUTE CONTROL JOINT CENTERLINE CEILING CLEAR CONCRETE MASONRY UNIT COLUMN COMPACTED CONCRETE CONSTRUCTION	NO/# NOM NSF NTS OC OD OHD OPNG OPP OS	NUMBER NOMINAL NON-SLIP FINI NOT TO SCALI ON CENTER OUTSIDE DIAM OVERHEAD DO OPENING OPPOSITE OVERFLOW S
CONT CONTR CORR CPL CPT CT CU CUSP CWF D D DC DEMO	CONTINUOUS/CONTINUE CONTRACTOR CORRUGATED CEMENT PLASTER CARPET CERAMIC TILE CONDENSING UNIT CUSPIDOR CURTAINWALL FRAMING DEPTH/DEEP DEGREE DISPLAY CASE DEMOLISH/DEMOLITION	PART PART'N PC PLAS PLAM PLYWD PREFAB PREFIN PSF PSI PTD PVC	PARTICLE MOVABLE PAR PRECAST CON PLATE/PROPE PLASTER PLASTIC LAMI PLYWOOD PREFABRICAT PREFINISHED POUNDS PER POUNDS PER PAINTED POLYVINYL CI
DTL DF DIA/Ø DIM DIV DS DWG	DETAIL DRINKING FOUNTAIN DIAMETER DIMENSION DIVISION DOWNSPOUT DRAWING	QT R RB RBF RC RES	QUARRY TILE RISER/RADIUM RESILIENT WA RUBBER FLOO RAIN CONDUC RESILIENT
EA EJ EL ELEC ELEV EQ EQUIP EIFS EWC EXH EX/EXIST EXP EXT	EACH EXPANSION JOINT ELEVATION ELECTRIC(AL) EQUAL EQUIPMENT EXTERIOR INSULATION FINISH ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR	RS REF REINF REQ'D REV RF RM RO RWO RTU RV	ROOF SUMP REFERENCE REFRIGERATO REINFORCING REQUIRED REVISION(S) ROOF EXHAUS REMOVABLE N ROUGH OPEN RIGHT OF WAY ROOF TOP UN ROOF VENT
FD FEC FF FHC FIN FIN FL FLR FOUND FT/' FTG FRP	FLOOR DRAIN FIRE EXTINGUISHER CABINET FORCED FLOW CABINET HEATER FIRE HOSE CABINET FINISH FINISH FLOOR FLOOR FOUNDATION FEET FOOTING FIBERGLASS REINFORCED POLYESTER	S SAAC SCHED SEAL SEC SFF SHT SIM SPEC(S) SP CMU SPI SPKR SQ SS	SINK SPRAY APPLIE SCHEDULE CONCRETE SI SECTION STOREFRONT SHEET SIMILAR SPECIFICATIC SPLIT FACE C SPORTS IMPA SPEAKER SQUARE SERVICE SINK
GA GALV GB GHT GL GLCMU GLZD GYP	GAUGE GALVANIZE(D) GRAB BARS GLAZED HOLLOW TILE GLASS GLAZED CMU GLAZED GYPSUM	SSM STD STL STRUCT SUSP SVT SV	SOLID SURFA STANDARD STEEL STRUCTURAL SUSPENDED SOLID VINYL 1 SHEET VINYL
H/HGT HB HM HORIZ HP HR HVAC ID IN/" INCL	HEIGHT HOSE BIB HOLLOW METAL HORIZONTAL HIGH POINT HOUR HEATING/VENTILATING/AIR CONDITIONING INSIDE DIAMETER INCH INCLUDE(D),(ING)	T T&B TB TC TEMP TER TOC TOF TOF TOF TOS TS TV TYP	TREAD TOP AND BOT TACK BOARD TOP OF CURB TEMPERED TERRAZZO TOP OF CONC TOP OF FOOT TOP OF FOOT TOP OF STEEL TUBE STEEL TELEVISION TYPICAL
INSUL INT	INSULATION/INSULATE(D) INTERIOR	UNO UV	UNLESS NOTE UNIT VENTILA
JST KIT	JOINT KITCHEN	VCT VCG VERT VIF VUV	VINYL COMPC VINYL COVER VERTICAL VERIFY IN FIE VERTICAL UN
		W/ W/O	WITH WITHOUT



A2.20 /

DRAWING SYMBOL

DETAIL LOCATOR

FOR CROSS-REFERENCING:

DETAIL IDENTIFICATION

SHEET WHERE DETAIL IS

DRAWN

SHEETS WHERE DETAIL IS CUT

LONG LEG HORIZONTAL LONG LEG VERTICAL LINEAR METAL CEILING LOCATION(S)

MANUFACTURER MARBLE THRESHOLD MARKER BOARD

MATERIAL/MAT MAKE UP AIR UNIT MECHANICAL

MINIMUM/MINUTE MISCELLANEOUS MASONRY LINTEL METAL PANEL

METAL WALL PANEL MASONRY OPENING METAL STUD FRAMING METAL THRESHOLD

NOT IN CONTRACT

NON-SLIP FINISH NOT TO SCALE

OUTSIDE DIAMETER OVERHEAD DOOR

OVERFLOW SUMP MOVABLE PARTITION

PRECAST CONCRETE PLATE/PROPERTY LINE PLASTIC LAMINATE PREFABRICATED

PREFINISHED POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH POLYVINYL CHLORIDE

QUARRY TILE

RISER/RADIUM RESILIENT WALL BASE/RUBBER BASE RUBBER FLOORING RAIN CONDUCTOR

REFERENCE REFRIGERATOR REINFORCING

REVISION(S) ROOF EXHAUST FAN REMOVABLE MULLION/ROOM ROUGH OPENING RIGHT OF WAY ROOF TOP UNIT

SPRAY APPLIED ACOUSTICAL COATING CONCRETE SEALER

STOREFRONT FRAMING

SPECIFICATIONS SPLIT FACE CMU SPORTS IMPACT FLOORING

SERVICE SINK/STAINLESS STEEL SOLID SURFACE MATERIAL

STRUCTURAL SUSPENDED SOLID VINYL TILE SHEET VINYL

TOP AND BOTTOM TACK BOARD TOP OF CURB

TOP OF CONCRETE TOP OF FOOTING TOP OF MASONRY TOP OF STEEL

UNLESS NOTED OTHERWISE UNIT VENTILATOR

VINYL COMPOSITION TILE VINYL COVERED GYPSUM BOARD VERIFY IN FIELD

VERTICAL UNIT VENTILATOR

WC

WD

WH

WP

WWF

WDSC

WOOD

WATER CLOSET WOOD SOUND CONTROL WATER HEATER WORKING POINT / WATERPROOF WELDED WIRE FABRIC



MISCELLANEOUS SYMBOLS

#### MOUNTING HEIGHTS















TACK BOARDS AND MARKER BOARDS

KEY PLAN





#### BUILDING INFORMATION

- EXISTING BUILDING IS TYPE E OCCUPANCY. NO CHANGE IN OCCUPANCY.
- 2. EXISTING BUILDING IS TYPE 2B CONSTRUCTION.
- 2. STUDENT OCCUPANT LOAD IS 1,746. NO INCREASE IN OCCUPANT LOAD.
- 4. EXISTING BUILDING IS SPRINKLED.
- 5. EXISTING BUILDING IS 3 STORY.
- 6. EXISTING FLOOR AREA: 488,430 SQ FT

#### CODE PLAN LEGEND

INDICATES AREA OF WORK FOR DRINKING FOUNTAIN REPLACEMENT

#### CODE PLAN INFORMATION

- ARMADA HIGH SCHOOL ) DESIGN CODES
- 2015 MICHIGAN REHABILITATION CODE (EXISTING BUILDING) NFPA 101 LIFE SAFETY CODE 2012 EDITION 2021 MICHIGAN PLUMBING CODE 2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
- 2) DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (106.6)
  A. A REPRESENTATIVE OF FRENCH ASSOCIATES WILL BE THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.

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APPROVED	DCJ

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#### PROJECT

Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET

LOWER LEVEL, FIRST FLOOR CODE PLANS

#### PROJECT NUMBER



SHEET NUMBER A0.02A



#### **BUILDING INFORMATION**

SEE DRAWING A2.00A FOR BUILDING CODE INFORMATION

KEY PLAN

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PROJECT

Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET SECOND FLOOR CODE PLAN

PROJECT NUMBER



SHEET NUMBER

















CAREFULLY GRIND DOWN EXISTING PORTION OF SPLIT FACE CMU - EXISTING SPLIT FACE CMU

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EXISTING GROUND





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#### PROJECT

Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET LOWER LEVER, FIRST FLOOR PLANS

#### PROJECT NUMBER





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PROJECT

Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET SECOND FLOOR PLAN

PROJECT NUMBER



SHEET NUMBER A2.11

MECI	HANICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL LINIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
САР	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
СО	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB IEMPERATURE
DEG	
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
	FULL LOAD AMPS
	FLOUR
FFD	FLINNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HUSE BIBB
HU Lup	
l <sup>10<sup>-</sup></sup>	

MECI	HANICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
HR	HOUR
HTG	HEATING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INST	INSTALLED
INV	INVERT
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
МВН	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOP	MAXIMUM OVER-CURRENT PROTECTION
N.C.	NOISE CRITERIA
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	
	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
	OUTSIDE DIAMETER
	OVERELOW ROOF SUMP
0587	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP (FEFT OF WATER)
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
PSIG	POUNDS PER SQUARE INCH – GAUGF
PT	PRESSURE / TEMPERATURE PORT
RA	RETURN AIR
RH	RELATIVE HUMIDITY
REQD	REQUIRED
REL.A	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
SA	SUPPLY AIR
SH	SHOWER
SP	STATIC PRESSURE
SqFt / SF	SQUARE FOOT/SQUARE FEET
SS	SERVICE SINK
TC	TEMPERATURE CONTROL
Т&Р	TEMPERATURE AND PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE

Ν ABBF W& WE WC WC WH

# ABE \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ Ļ —-C —-E \_\_\_\_X . \_\_\_\_\_ \_\_\_\_ \_\_\_> --\_\_\_\_X -----/*/* (0 @ н

IECHANICAL ADDREVIA HUNS
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REV.	DESCRIPTION
R	URINAL
D	VOLUME DAMPER (MANUALLY ADJUSTABLE)
ſR	VENT THRU ROOF
V	WASTE
٤V	WASTE AND VENT
В	WET BULB TEMPERATURE
C	WATER CLOSET
G	WATER GAUGE
Ή	WALL HYDRANT

MECHANICAL PIPING SYMBOLS		
ABBREV.	DESCRIPTION	
o	PIPE ELBOW UP	
	PIPE ELBOW DOWN	
<del></del>	PIPE TEE DOWN	
	DIRECTION OF FLOW	
	UNION	
	STRAINER	
	CONCENTRIC REDUCER	
	ECCENTRIC REDUCER	
	EXPANSION JOINT	
	FLEXIBLE CONNECTION	
	PIPE ANCHOR	
	PIPE GUIDE	
, M		
	GLUBE VALVE	
	BALL VALVE	
	BUTTERFLY VALVE	
<u>→</u>	BACKWATER VALVE	
<u>k</u>	ANGLE VALVE	
	CHECK VALVE (SWING)	
	CHECK VALVE (SPRING)	
I∕⊽I	PLUG VALVE	
	NEEDLE VALVE	
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)	
↓	PRESSURE REGULATING VALVE	
X	SOLENOID VALVE	
Ŕ <u></u> ₩	CONTROL VALVE (2-WAY / 3-WAY)	
$\bigcirc$	CENTRIFUGAL FAN	
<del>L</del> O	AUTOMATIC GAS SHUT-OFF VALVE	
	TRAP (PLAN VIEW)	
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)	
У_У	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)	
Ô	ROOF SUMP	
——⊖ C0	CLEAN OUT (IN FLOOR)	
//co	CLEAN OUT (IN LINE)	
	CLEAN OUT (WALL)	
BFP	BACKFLOW PREVENTER	
∕1∕⋈ <b>-</b> M	WATER METER ASSEMBLY	
+	HOSE BIBB, WALL HYDRANT	
	DIRECTION OF PIPE PITCH	
$\odot$	SPRINKLER HEAD (UPRIGHT)	
$\triangleleft$	SPRINKLER HEAD (SIDEWALL)	
—FS	FLOW SWITCH	
<u> </u>	SIAMESE CONNECTION (YARD)	
, ,	SIAMESE CONNECTION (WALL MOUNTED)	
× H	FIRE HYDRANT	
	FLOW MEASURING DEVICE	
<u>≫</u> ⊼	BALANCING VAI VF	
	COMBINATION FLOW MEASURING AND RALANCING DEVICE	
<u>ド</u> 「天MAV		
¥		

MECHANICAL SYMBOLS		
ABBREV.	DESCRIPTION	
<u>کے ج</u>	RECTANGULAR TAKE-OFF (SINGLE LINE)	
	RECTANGULAR TAKE-OFF (DOUBLE LINE)	
5- <u>7</u> -5	ROUND TAKE-OFF (SINGLE LINE)	
	ROUND TAKE-OFF (DOUBLE LINE)	
	SPIN-IN FITTING (WITH VOLUME DAMPER)	
	ELBOW (WITH TURNING VANES)	
	RADIUS RECTANGULAR ELBOW	
	RADIUS ROUND ELBOW	
	RECTANGULAR ELBOW UP	
	ROUND ELBOW UP	
	RECTANGULAR ELBOW DOWN	
	ROUND ELBOW DOWN	
	CONCENTRIC TRANSITION (DOUBLE LINE)	
$ \qquad \qquad$	CONCENTRIC TRANSITION (SINGLE LINE)	
	ECCENTRIC TRANSITION (DOUBLE LINE)	
<u>ب ۲</u>	ECCENTRIC TRANSITION (SINGLE LINE)	
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
ς <u>R_</u> ς	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)	
<u> </u>	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)	
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER	
,−⊋	SUPPLY DIFFUSER	
	LINEAR SLOT DIFFUSER	
$\leftarrow$	RETURN OR EXHAUST GRILLE	
<b></b>	TRANSFER GRILLE	
	CROSS SECTION OF SUPPLY AIR DUCT	
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT	
	EXISTING FIRE DAMPER (HORIZONTAL)	
	EXISTING	
	FIRE DAMPER (VERTICAL) NEW	
<u> </u>	EXISTING SMOKE DAMPER	
	NEW	
	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	EXISTING COMBINATION FIRE/SMOKE DAMPER	
	NEW (HORIZONTAL)	
	VOLUME DAMPER (MANUALLY ADJUSTABLE)	
M	MOTORIZED DAMPER	
SD T	SMOKE DETECTOR	
<u>(C02</u> )	CO2 SENSOR	
(T)	THERMOSTAT OR TEMPERATURE SENSOR	
H	HUMIDISTAT OR HUMIDITY SENSOR	
-∿► -►	RETURN OR EXHAUST / SUPPLY AIR FLOW	

	PIPING LEGEND
ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
——F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
FOS	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
——BCW——	BOOSTED-DOMESTIC COLD WATER PIPING
——BHW——	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
	NON POTABLE COLD WATER PIPING
——————————————————————————————————————	TEMPERED WATER PIPING
——HW——	DOMESTIC HOT WATER PIPING
—HW(XXX)—	DOMESTIC HOT WATER PIPING CIRCULATED AT XXX TEMPERATURE
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
——CHWR——	CHILLED WATER RETURN PIPING
	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
——HHWR——	HEATING HOT WATER RETURN PIPING
—HHWS——	HEATING HOT WATER SUPPLY PIPING
HPLR	HEAT PUMP LOOP RETURN PIPING
HPLS	HEAT PUMP LOOP SUPPLY PIPING
RL	REFRIGERANT LIQUID PIPING
	REFRIGERANT SUCTION PIPING
HGB	HUT GAS BY-PASS PIPING
GXHR	GEO HEAT EXCHANGE RETURN
GXHS-	GEU HEAT EXCHANGE SUPPLY
— HPS—	NUM PRESSURE STEAM PIPING
	STEAM CONDENSATE DETUDA DIDINO
	DIMOED STEAM CONDENSATE DETUDAL DIDING
	LOW DRESSURE CONDENSATE DIDING
	MEDICAL AIR DIDINIC
N	
N	AVYCEN CAS DIDINO
UZ	
	VALUUM PIPING

	APPLICABLE CODES AND REGULATIONS
YEAR	CODE
2021	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2021	MICHIGAN PLUMBING CODE
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES
_	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA–AG)

	DRAWING INDEX
IT NO	DESCRIPTION
0.00	MECHANICAL GENERAL INFORMATION
.00	LOWER LEVEL MECHANICAL PLAN
.10	FIRST FLOOR MECHANICAL PLAN
.20	SECOND FLOOR MECHANICAL PLAN

[	DRAWING NOTATION
SYMBOL	DESCRIPTION
	NEW WORK KEY NOTE NO. 1
$\underline{\land}$	DEMOLITION KEY NOTE NO. 1
<u>EF-1</u>	EQUIPMENT TAG
S-1 10x10 100-2	AIR TERMINAL TAG: IE: DIFFUSER TYPE = $S-1$ NECK SIZE = $10 \times 10$ CFM = $100$ (TYPICAL FOR 2)
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
///	EXISTING SYSTEM COMPONENT TO BE REMOVED
<b>`</b> •	POINT OF NEW CONNECTION
	SHEET M5.2 ON WHICH SECTION DRAWN
6 M5.2	SECTION NO. 6 SECTION SCALE: 1/4" = 1' - 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
X-#	YSTEM RISER S: SANITARY ESIGNATION D: DOMESTIC WATER H: HVAC PIPING SP: STAIRWELL PRESSURIZATION V: VENT - RISER NUMBER E: EXHAUST

ISSUE DATE ISSUED FOR 05/08/2025 BIDS DRAWN RFB CHECKED DGN APPROVED



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Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET MECHANICAL GENERAL INFORMATION

#### PROJECT NUMBER



SHEET NUMBER

M0.00

KEY PLAN





#### PLUMBING FIXTURES/SPECIALTIES SCHEDULE

PIPE CONNECTION SIZES		MANUFACTURER &						
	WASTE	VENT	CW	HW	MODEL NO.	ACCESSORIES		
SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FILTER MONITOR, STAINLESS STEEL HINGED DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLACEMENT FILTER QUANTITY. MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED FOR HUMAN CONSUMPTION (FILTERED).		

1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES. 2. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1.

3. PROVIDE COMMERCIAL GRADE SUPPLIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.



#### MECHANICAL DEMOLITION NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- 2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
- 3. VERIFY DEPTH, SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
- 4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
- 5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
- 6. IDENTIFIED SCOPE ITEMS SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES.
- 7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
- 8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

#### PLUMBING GENERAL NOTES

- 1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES INCLUDING REQUIRED COMPONENTS, OFFSETS REQUIRED TO AVOID THE STRUCTURE, ETC.
- 2. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- 4. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
- 5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH THE WORK OF ALL OTHER TRADES, EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK.
- 6. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL MAINTAIN REQUIRED CLEARANCES OVER, AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT, PANELS, TRANSFORMERS, ETC. PIPING SHALL NOT INTERFERE WITH, OR BE INSTALLED IN A LOCATION THAT RESTRICTS ACCESS OR CLEARANCE TO ELECTRICAL OR MECHANICAL DEVICES. PROVIDE REQUIRED ACCESS AND CLEARANCE AROUND ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
- 7. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL MECHANICAL SYSTEMS.
- 8. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

#### **KEYED NOTES**

1. REMOVE EXISTING DRINKING FOUNTAIN(S)/ELECTRIC WATER COOLER(S) AND PIPING AS REQUIRED TO FACILITATE NEW CONSTRUCTION. REMOVE UNUSED EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU EXISTING CW PIPING BACK TO LAST ACTIVE MAIN AND ABANDON PIPING IN CMU WALLS. PROVIDE NEW ELECTRIC WATER COOLER WITH STAINLESS STEEL BACK PANEL – COORDINATE EXACT WALL AREA COVERAGE WITH EXISTING CONDITIONS. COORDINATE WITH ARCH TRADES FOR MOUNTING THE S.S. BACK PANEL. MODIFY/EXTEND PIPING AS REQUIRED TO CONNECT NEW FIXTURE(S) TO EXISTING UTILITIES. REPLACE STOP VALVES.



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## FRENCH

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#### Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET

### LOWER LEVEL MECHANICAL PLAN

PROJECT NUMBER





SHEET NUMBER





ТАС	BARRIER		PIPE CONNECTION SIZES				MANUFACTURER &			
TAG	FREE		WASTE	VENT	CW	CW HW MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	ACCESSORIES
EWC-1	Y	SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	_	ELKAY: LZS8WSSP-PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FIL DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLAC MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED		

NOTES:

#### MECHANICAL DEMOLITION NOTES

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KEY PLAN





## FRENCH

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#### Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET FIRST FLOOR MECHANICAL PLAN

#### PROJECT NUMBER







FIRST FLOOR MECHANICAL PLAN SCALE:1/32" = 1'-0"

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TAG	BARRIER FREE	ITEM	PIPE CONNECTION SIZES				MANUFACTURER &		
			WASTE	VENT	CW	HW	MODEL NO.	MODEL NO.	MODEL NO.
	EWC-1	Y	SINGLE ELECTRIC WATER COOLER WITH BOTTLE FILLER	1-1/2"	1-1/2"	1/2"	-	ELKAY: LZS8WSSP—PF	120V/1PH, 5 FLA, 370 WATTS, SHUT OFF VALVE AND P-TRAP, VISUAL FIL DROP DOWN FRONT SHROUD FOR EASY FILTER ACCESS. PROVIDE CANE APRON FOR BI-LEVEL APPLICATIONS. PROVIDE ELKAY WASTELINE DRAIN ASSEMBLY FOR BI-LEVEL APPLICATIONS. PROVIDE WITH PFOA/PFOS FILTER. COORDINATE WITH OWNER FOR REPLAC MICHIGAN CLEAN WATER DRINKING ACT 2023-PA-0154: WATER INTENDED

<u>NOTES</u>

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KEY PLAN

ISSUED FOR ISSUE DATE BIDS 05/08/2025 DRAWN RFB CHECKED DGN APPROVED



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#### Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET SECOND FLOOR MECHANICAL PLAN

#### PROJECT NUMBER







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				COPI	PER FEEDER SCHEDULE			
FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
(15S)	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	(15N)	12	4#12, 1#12 GND IN 3/4"C
205	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	(20N)	12	4#12, 1#12 GND IN 3/4"C
255	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	(25N)	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	(30N)	10	4#10, 1#10 GND IN 3/4"C
<u>355</u>	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	(35N)	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	(40N)	8	4#8, 1#10 GND IN 3/4"C
<b>4</b> 5S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	(45N)	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	(50N)	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
<b>70S</b>	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	(70N)	4	4#4, 1#8 GND IN 1 1/4"C
<b>80S</b>	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
(100S)	1	2#1, 1#8 GND IN 1 1/4"C	(100)	1	3#1, 1#8 GND IN 1 1/4"C	(100N)	1	4#1, 1#8 GND IN 1 1/2"C
			(110)	2	3#2, 1#6 IN 1 1/4"C	(110N)	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	(125N)	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	(150N)	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	(175N)	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	(200N)	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	(225N)	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3–250 KCMIL, 1#4 GND IN 2"C	(250N)	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3–350 KCMIL, 1#4 GND IN 2"C	(300N)	350	4–350 KCMIL, 1#4 GND IN 3"C
			350	500	3–500 KCMIL, 1#3 GND IN 3"C	(350N)	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	(400N)	600	4–600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	(450N)	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2–250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	(500N)	2-250	(2) 4–250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3–350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4–350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3–500 KCMIL, 1#1/0 GND IN 3"C	(700N)	2-500	(2) 4–500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	(800N)	2-600	(2) 4–600 KCMIL, 1#1/0 GND IN 4"C
			(1000)	3–500	(3) 3–500 KCMIL, 1#2/0 GND IN 3"C	(1000N)	3–500	(3) 4–500 KCMIL, 1#2/0 GND IN 3 1/2"C
			(1200)	3-600	(3) 3–600 KCMIL, 1#3/0 GND IN 4"C	(1200N)	3-600	(3) 4–600 KCMIL, 1#3/0 GND IN 4"C
			(1600)	4-600	(4) 3–600 KCMIL, 1#4/0 GND IN 4"C	(1600N)	4-600	(4) 4–600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7–500	(7) 3–500 KCMIL, 1–350 KCMIL GND IN 3 1/2"C	25001	7–500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	<b>3000</b>	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000	10-600	(10) 4–600 KCMIL, 1–500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	<b>5000</b>	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4–600 KCMIL, 1–800 KCMIL GND IN 4"C

<u>NOTES:</u>

AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)

2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.

3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

> LIGHTING CONTROLS LEGEND SYMBOL DESCRIPTION SINGLE POLE SWITCH \$ THREE WAY SWITCH \$з FOUR WAY SWITCH \$4 LIGHT CONTROL LOCATION \$L GENERATOR TRANSFER DEVICE G



#### TECHNOLOGY SYMBOL LIST

IBOL	DESCRIPTION
$\square$	CAMERA
R	CARD READER
♥-	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET - FLOOR
•	TECHNOLOGY OUTLET – WALL
νH	MAGNETIC DOOR HOLDER
•	PUSH BUTTON
S	SPEAKER
$\bigcirc$	WALL CLOCK – SINGLE FACE
$\oplus$	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
AP	WIRELESS ACCESS POINT

 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED. 2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

	POWER SYMBOL LIST
SYMBOL	DESCRIPTION
•	CONDUIT DOWN
0	CONDUIT UP
4	DISCONNECT SWITCH - NON FUSED
L	DISCONNECT SWITCH - FUSED
ЧX	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
$\bullet$	GROUNDING ROD
Ē	GROUND
<del></del>	GROUNDING BAR
J	JUNCTION BOX
Μ	METER
$\mathcal{N}$	MOTOR – SINGLE PHASE
$\mathbf{V}$	MOTOR – THREE PHASE
\$м	MOTOR RATED SWITCH
φ	POWER RECEPTACLE – SIMPLEX TYPE
φ	POWER RECEPTACLE – DUPLEX TYPE
$\oplus$	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
Ф <sub>USB</sub>	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
+	POWER RECEPTACLE – QUADRUPLEX TYPE
FB	POWER RECEPTACLE – RECESSED FLOOR TYPE
PT	POWER RECEPTACLE – POKE THRU TYPE
$\heartsuit$	POWER RECEPTACLE – SPECIALTY TYPE
TC	TIME CLOCK
Т	TRANSFORMER
IOTES:	F RATINGS/SIZES SHALL BE COORDINATED WITH PLANS

ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIR	RE ALARM SYMBOL LIST							
SYMBOL	DESCRIPTION							
FA	AUDIBLE DEVICE/WALL MOUNTED							
F	VISUAL DEVICE/WALL MOUNTED							
Ē	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED							
F	AUDIBLE DEVICE/CEILING MOUNTED							
Ē	VISUAL DEVICE/CEILING MOUNTED							
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED							
¢\$	CO ALARM/SMOKE DETECTOR							
Ś	SMOKE DETECTOR							
Ô	CO ALARM							
<u>(</u> )	DUCT MOUNTED SMOKE DETECTOR							
H	HEAT DETECTOR							
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET							
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)							
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)							
F	MANUAL PULL STATION							
FS	FLOW SWITCH							
TS	TAMPER SWITCH							
FAA	FIRE ALARM ANNUNCIATOR PANEL							
FACP	FIRE ALARM CONTROL PANEL							
1/0	INPUT/OUTPUT CONTROL MODULE							
NOTES: 1. DRAWINGS	INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND							

DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS. 2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL

SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

ELEC	CTRICAL ABBREVIATIONS
ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
A	AMPERE
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
AIS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT OR CEILING MOUNTED
СВ	CIRCUIT BREAKER
CL	CONTROL LOAD
CU	COPPER
CT	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
LPU (F)	EMERGENUT FUWER UPP
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLI AMPERE
KWH	KILOWATT HOUR
LP	LIGHTING PANEL
МСВ	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
PH. OR Ø	PHASE
Р	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(K) (DD)	REMOVE AND DEINSTALL
RMC	RIGID METALLIC CONDUIT
RP	RECEPTACLE PANEL
TBB	TELEPHONE BACKBOARD
TYP.	TYPICAL
UC	UNDER COUNTER
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLI AMPERE
WC	
WP	WEATHERPROOF
XFMR	TRANSFORMER

#### DRAWING INDEX

HT NO	DESCRIPTION	
0.00	ELECTRICAL GENERAL INFORMATION	
1.00	LOWER LEVEL ELECTRICAL PLAN	
1.10	FIRST FLOOR ELECTRICAL PLAN	
1.20	SECOND FLOOR ELECTRICAL PLAN	

DRAWING NOTATION				
SYMBOL	DESCRIPTION			
L1	LIGHTING FIXTURE TAG			
	CONSTRUCTION KEY NOTE NUMBER 1			
$\sum_{1}$	DEMOLITION KEY NOTE NUMBER 1			
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)			
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)			
<u>EQUIPMENT</u>	EQUIPMENT TAG			
	EXISTING DEVICES OR EQUIPMENT			
	NEW OR MODIFIED DEVICES OR EQUIPMENT			
	NEW OR MODIFIED UNDERGROUND WIRING			
	EXISTING SYSTEM COMPONENT TO BE REMOVED			
•	POINT OF NEW CONNECTION			
	SECTION NUMBER 4			

SHEET E5.2 ON WHICH SECTION IS DRAWN
6    SECTION NO. 6      6    SECTION      E5.2    SCALE: 1/4" = 1' - 0"      SHEET E5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)
LIGHTING CONTROL TAG SCENE SCHEDULE ID 'A' (MAY NOT APPEAR ON EVERY TAG) DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TAG)
DEVICES REQUIRED IN THE AREA.

#### APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2021	MICHIGAN BUILDING CODE
2015	MICHIGAN ENERGY CODE
2015	MICHIGAN RESIDENTIAL CODE
2015	MICHIGAN REHABILITATION CODE
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8
2023	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2013	NFPA 72
2013	NFPA 101
2013	NFPA 110
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIE
1985	DETROIT ELEVATOR CODE

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APPROVED	SET



FRENCH 2851 High Meadow Circle | Suite 100 Auburn Hills | MI 48326 248.656.1377



Strategic Energy Solutions® 4000 W. Eleven Mile Road Berkley, MI 48072 Phone 248.399.1900 Fax 248.399.1901 www.sesnet.com © 2025 SES, INC. PROJECT

# Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER



SHEET NUMBER

E0.00



KEY PLAN



#### ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- 3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### DEMOLITION KEYED NOTES $\mathbb{A}$

1. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING ASSOCIATED CIRCUIT BREAKER AND ASSOCIATED RECEPTACLE(S) FEEDING EXISTING WATER COOLER, WHERE APPLICABLE. EXISTING BRANCH CIRCUIT TO REMAIN AND SHALL BE REUSED FOR NEW PLUG-IN TYPE WATER COOLER. EXISTING INSTALLATION CONDITIONS MAY VARY (E.G., HARDWIRED UNITS, DUAL-RECEPTACLE SETUPS, OR NON-ELECTRIC DRINKING FOUNTAINS); CONTRACTOR TO FIELD VERIFY. WHERE EXISTING UNIT IS NON-ELECTRIC, PROVIDE PROVISIONS FOR NEW BRANCH CIRCUIT AND GFCI CIRCUIT BREAKER UNDER NEW WORK.

#### NEW POWER GENERAL NOTES

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

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#### NEW WORK KEYED NOTES

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.



KEY PLAN





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#### Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET LOWER LEVEL ELECTRICAL PLAN

#### PROJECT NUMBER











#### ELECTRICAL DEMOLITION NOTES

- 1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- 2. EXAMINE THE DRAWINGS OF OTHER TRADES. BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- 3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- 4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- 5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- 6. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- 7. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- 8. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- 9. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.

#### DEMOLITION KEYED NOTES

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#### **NEW POWER GENERAL NOTES**

- 1. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
- 2. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
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NEW WORK KEYED NOTES  $\langle \# \rangle$ 

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#### Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

SHEET FIRST FLOOR ELECTRICAL PLAN











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#### ELECTRICAL DEMOLITION NOTES

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- 3. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- 4. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.
- 5. ALL NEW 15- AND 20-AMPERE, 125- AND 250-VOLT NONLOCKING-TYPE RECEPTACLES TO BE LISTED TAMPER-RESISTANT TYPE THROUGHOUT THIS SCHOOL. EXCEPTIONS TO THIS INCLUDE RECEPTACLES LOCATED MORE THAN 5.5 FEET ABOVE THE FLOOR AND SINGLE OR DUPLEX RECEPTACLES FOR DEDICATED APPLIANCES THAT ARE NOT READILY ACCESSIBLE. ANY EXISTING RECEPTACLES THAT ARE INCLUDED IN THE SCOPE OF RENOVATION WORK. SHALL BE UPDATED PER NEW RECEPTACLE NOTES ABOVE AS WELL.

(#) <u>NEW WORK KEYED NOTES</u>

1. INSTALL NEW WATER COOLER IN EXISTING LOCATION. PROVIDE NEW RECEPTACLE AND RECONNECT TO EXISTING BRANCH CIRCUIT. REWORK WIRING AS NECESSARY TO ACCOMMODATE NEW PLUG-IN CONFIGURATION. PROVIDE NEW SINGLE POLE GFCI-TYPE CIRCUIT BREAKER IN PANEL PER NEC 422.5(A). CONTRACTOR SHALL VERIFY PANELBOARD TYPE AND PROVIDE COMPATIBLE BREAKER MODEL AS REQUIRED FOR EACH LOCATION. COORDINATE FINAL LOCATION OF RECEPTACLE WITH WATER COOLER SPECIFICATIONS AND ACCESSORIES.







# FRENCH

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#### Anchor Bay Schools Anchor Bay High School Plumbing Upgrades

Fair Haven, Michigan

#### SHEET SECOND FLOOR ELECTRICAL PLAN

#### PROJECT NUMBER







