HARFORD COUNTY PUBLIC SCHOOLS
102 South Hickory Avenue
Bel Air, Maryland 21014

BID ANNOUNCEMENT – EXPEDITED BID

BID TITLE:	**Outdoor Freezer and Loading Dock Extension at Church Creek Elementary School (Re-Advertisement)**
BID NUMBER:	**25-JHP-015**
BID OPENING DATE AND TIME:	**November 26, 2024, 2:30 pm local time**
BID OPENING / BID EMAIL SUBMITTAL ADDRESS:	Bid Opening will be online via Teams at the following: **Microsoft Teams Need help?** **Join the meeting now** **Meeting ID: 265 315 574 531** **Passcode: gmRdPj** **Dial in by phone** **+1 240-600-1475,,677612753# United States, Bethesda** **Find a local number** **Phone conference ID: 677 612 753#** **For organizers: Meeting options | Reset dial-in PIN** Submit your bid via electronically to bids@hcps.org.
PROCUREMENT AGENT:	Jennifer Horner, CPPB 410-809-6044 Jennifer.Horner@hcps.org
QUESTIONS DUE DATE AND TIME:	Questions must be emailed to Jennifer.Horner@hcps.org no later than 2:30 pm on **November 14, 2024.**
7ADDENDUM ISSUED:	No later than **November 18, 2024.**
SITE INSPECTION:	Contact Jeff Wilson at 410-638-4078 or jeffrey.wilson1@hcps.org to schedule a site visit.
BONDING REQUIRED:	Not Required.
MBE DOCUMENTS REQUIRED:	Not Required.
TIMELY DELIVERY OF BID DOCUMENTS:	Bids must be received in the Procurement e-mail box, bids@hcps.org, on or before the bid opening day and time. (PDF format Only) **It is the Bidder(s) responsibility to verify that the Bid has been received at bids@hcps.org, prior to the Bid Opening. 'Read Receipts' are not sufficient. Bidders may contact the Buyer listed within the solicitation, by email or phone, to confirm receipt of bids.**
INCLEMENT WEATHER:	If Harford County Public Schools Administrative Offices are closed on the day a proposal is DUE, that proposal will be due at the same time the next day the Administrative Offices are open.

Bidders may obtain the Solicitation Documents by downloading the information at our website: www.hcps.org/departments/BusinessServices/purchasing.aspx. Bidders shall continue to check the HCPS website for possible addenda to the bid(s) prior to the bid opening date.

The Contract Award Report, will be posted on the HCPS webpage at https://www.hcps.org/departments/BusinessServices/procurement.aspx (Solicitation Results) after evaluation and approval by the Board of Education of Harford County, if required.

LATE BIDS WILL BE REJECTED AND RETURNED UNOPENED

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Board of Education of Harford County, Maryland
Procurement Department
102 South Hickory Avenue, Third Floor, Suite 310
Bel Air, Maryland 21014

INSTRUCTION TO BIDDERS

The following provisions, where applicable, will become part of any contractual relationship developed as a result of the solicitation.

1.0 AN INVITATION TO BID SUBMISSION

1.1 The Board of Education of Harford County hereinafter referred to as Harford County Public Schools or HCPS, invites all interested and qualified Contractors/Bidders to submit a bid. These specifications and requirements are intended to cover the procurement of services and/or commodities requested and include, but are not limited to, providing labor, materials, equipment and supervision of labor and subcontractors to complete requirements as identified by HCPS.

1.2 In accordance with State law and HCPS policies, solicitations shall be published a minimum of fourteen (14) calendar days in advance of due date for any bid having a potential award value of $50,000 or more.

1.3 Unless otherwise indicated, HCPS shall receive sealed bids until the date and time indicated on bid or as modified by addenda. Bids must be e-mailed to bids@hcps.org, Bids must be clearly marked on the subject line: Name of Bidder, Bid Number and Solicitation Title. **Late bids will be rejected.**

1.4 Brand name and model numbers are offered as a reference for bidders as to the style, size, weight, and other characteristics of the item(s) in the Brand name and model numbers are offered as a reference for bidders as to the style, size, weight, and other characteristics of the item(s) in the Specifications. The use of such brand names should not be interpreted as the exclusive brand desired unless so stated. The determination of the acceptability and/or the criteria for acceptability of an alternate is solely the responsibility of HCPS.

1.5 The Bidder or their authorized representatives are expected to fully inform themselves as to the conditions, requirements, circumstances, prerequisites, qualifications and/or specifications before submitting their bid. A bidder's failure to become fully informed is at the Bidder's sole and complete risk of loss. The Bidder shall have no right to any damages, cost and/or any other remedy at law or equity against HCPS for any miscalculation, misunderstanding, error (either omissions or commissions), mistake, misinterpretation, and/or the failure by the Bidder to obtain an award of bid, award of contract and/or profits, fees or money from HCPS when the Bidder failed to fully inform themselves. In the case of error in extension of prices in the Bid, the unit price shall govern, or the entire bid may be declared non-responsive.

1.6 Where provision is made on the Bid Form for bidding items on an individual, group or aggregate basis, the award will be made on whichever basis is in the best interest of HCPS. When an aggregate bid is requested, the unit prices for each item shall be identified on the Bid Form for accounting purposes. The unit prices in an aggregate bid should be consistent with the total quoted price for an aggregate bid.

1.7 The product offered by the Bidder shall be new, not used, and the latest version unless otherwise requested by HCPS. Should a product be discontinued and/or upgraded during the course of the Contract, the Awarded Bidder shall offer to HCPS a new alternate product meeting and/or exceeding the established specifications, under the same terms, conditions and prices as the originally offered item.

1.8 The Awarded Bidder, after award and before manufacture and/or shipment, may be required to submit working drawings or detailed descriptive data identified as acceptable to HCPS, which provide sufficient data to enable HCPS to judge the Bidder's compliance with specifications.

2.0 BID PREPARATION, PROPOSAL SHEET, AND BID OPENING

2.1 Bidder must submit one (1) original with original signatures of the Bid using HCPS bid forms. The Bidder should make and retain one (1) copy of the Bid for their files. Bids must be signed and submitted by an authorized representative of the Bidder. Each bidder may attach a letter of explanation to the Bid, if so

desired, to provide an explanation of any detail(s) in the Bid.

2.2 Signed bids must be returned electronically via e-mail to bids@hcps.org, ONLY. HCPS will not accept any facsimile transmission or electronic submissions to HCPS Procurement Agents, representatives, or employees. Bids must be submitted in **PDF format, ONLY**, links to documents will not be accepted. Multiple emails may be sent if files are too large for one email. It is the Bidder(s) responsibility to verify that the Bid has been received at bids@hcps.org, prior to the Bid Opening. 'Read Receipts' are not sufficient. Bidders may contact the Procurement Agent listed within the solicitation, by email or phone, to confirm receipt of bids.

2.3 Each bid must show the full business address, telephone number, fax number, email address, and federal tax identification number of the Bidder and be signed by the person or persons legally authorized to sign contracts. All correspondence concerning the Bid and Contract, including Letter of Intent, copy of Contract, and Purchase Order, will be mailed or delivered to the contact information shown on the Bid in the absence of written instructions from the Bidder to the contrary.

2.4 All bidders shall be required to complete the certificates and/or affidavits, and/or acknowledgements that are incorporated into the proposal pages of this specification. Such documents are required by Local, State or Federal funding agencies of HCPS as part of the bidding process. The documents may include but are not limited to: Anti-Bribery Affidavit, Debarment Certificate, Employment of Sex Offenders and Other Criminal Offenders Affidavit, Sales Tax Certification, Minority Bidder Status, and when applicable, Asbestos Free Certification and any others that may be required.

2.5 Bid Opening

2.5.1 At the public opening of the Bid, the Bidder's names and their pricing will be read and recorded. All bids submitted by the required time will be accepted for further evaluation. Following complete evaluation of the Bids following opening, bids may be rejected due to major irregularities or omissions and will be rendered as non-responsive.

2.5.2 Complete evaluations of the Bids will not take place at the bid opening and no indication of award will be made. HCPS reserves the right to review all responses and analyze the results of the procurement process. Any tabulation provided at this time is draft status only.

2.5.3 A final recommendation(s) for contract award may be prepared for review and when required, approval by the Board of Education of Harford County.

2.5.4 The Board of Education of Harford County must approve contract awards of $100,000 or more. Formal contract award is contingent upon the required Board approval.

2.5.5 Bidders may correct a minor irregularity and minor irregularities may be waived. A minor irregularity is one that is merely a matter of form and not of substance or pertains to an immaterial or inconsequential defect or variation in a bid, the correction or waiver of which would not be prejudicial to other bidders. When so noted, minor irregularities may be corrected within forty-eight (48) hours following notification. The Procurement Supervisor will be the final determinate of what is a minor irregularity.

2.5.6 HCPS also reserves the right to reject any or all bids and/or waive technical defects and minor irregularities at the discretion of the Supervisor of Procurement, HCPS or designee if, in its judgment the interests of HCPS shall so require. Bids may be withdrawn before the scheduled time of opening. Withdrawal is not permitted after the scheduled time of opening.

2.5.7 Any omissions, errors, conflicts, or discrepancies in this document shall be called to the attention of HCPS IN WRITING within five (5) working days prior to the bid opening.

2.5.8 Omission of any specification or details of any specification which would normally apply to the supplies and/or equipment described herein, shall not relieve the Bidder from fulfilling those required specifications needed to provide an end product or service best suited to the intended purpose of this contract as determined by the Supervisor of Procurement.

2.5.9 Up to and including the time for bid opening, a bidder may correct a defect or variation with respect to the Bid Bond, acknowledgement or addenda or MBE submission material.

2.6 At the time of the bid opening each bidder will be presumed to have read and to be thoroughly familiar with the specifications and related documents (including all Addenda). The failure or omission of any bidder to receive or examine any form, instrument, or document shall in no way relieve them from any obligation in respect of their bid.

3.0 AWARD OR REJECTION OF BIDS

3.1 Bids will be awarded to the lowest responsive and responsible bidder whose bid meets the requirements and evaluation criteria set forth in the invitation for bid and is in the best interest of HCPS.

3.2 HCPS reserves the right to reject a bid of bidders pursuant to Section 5-112 of the Education Article of the Annotated Code of Maryland.

3.3 Bidder SHALL NOT offer more than one price on each item even though they may feel that they have two or more types or styles that will meet specifications. If Bidder submits more than one price per item specified, Bidder may be deemed non-responsive. Bidders are allowed to also offer incentives, discounts, and promotional pricing, however; if conditions are attached to pricing, the pricing may be rejected.

3.4 Each bidder cannot offer more than one (1) bid submittal.

3.5 HCPS also reserves the right to reject a bid of firms who have demonstrated performance deficiencies or who have previously failed to perform properly or complete on time other Board contracts.

3.6 HCPS reserves the right to reject any or all bids.

3.7 HCPS reserves the right to re-advertise for other bids for the identical requirement if it is in the best interest of HCPS.

3.8 For Information Technology (IT), Operational Technology (OT), and Software solicitations **ONLY**. Should HCPS receive responses that offer products of similar cost and functionality, HCPS reserves the right to award a contract to the more secure offering and/or supplier to meet cybersecurity requirements as outlined by the National Institute of Standards and Technology.

4.0 ANNULMENTS AND RESERVATIONS

4.1 Conditional proposals will not be considered.

4.2 HCPS reserves the right to waive technical defects within submittals.

4.3 HCPS may conduct any necessary investigation to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to HCPS all such information and data requested. HCPS reserves the right to reject any proposal if the evidence submitted by the Bidder or investigation of such bidder fails to satisfy HCPS that such bidder is properly qualified to carry out the obligations of the Contract and to complete all stipulated requirements.

4.4 HCPS reserves the right to annul any contract, if in its opinion there shall be a failure, at any time, to perform faithfully any of its stipulations, or in case of any willful attempt to impose upon HCPS, materials, products and/or workmanship inferior to that required by the Awarded Bidder, and any action taken in pursuance of this latter stipulation shall not affect or impair any rights or claims of HCPS to damages for the breach of any covenant of the Contract by the Awarded Bidder.

4.5 Unbalanced proposals will not be accepted.

4.6 HCPS shall have the right to reject any or all bids, reject a bid not accompanied by a required bid security or by other data required by the bidding documents, or reject a bid which is in any way incomplete or irregular.

5.0 MULTI-AGENCY PROCUREMENT

5.1 HCPS reserves the right to extend the terms and conditions of this solicitation to any and all other government agencies. All purchase and payment transactions will be made directly between the Contractor and the requesting public agency.

5.2 Each participating jurisdiction or agency shall enter into its own contract if necessary, with the Awarded Bidder(s). HCPS assumes no obligation on behalf of any other entity.

6.0 TIE BIDS

In the event of tie bids, the award(s) shall be made as per the procedure specified in the Harford County Public Schools Procurement Manual.

7.0 WAIVER OF TECHNICALITIES

Minor differences in the specifications or other minor technicalities may be waived at the discretion of the Supervisor of Procurement.

8.0 BID PRICES

8.1 All pricing must remain firm for sixty (60) days from date of bid opening unless otherwise specified.

8.2 Unit Prices must be rounded off to no more than two (2) decimal places, unless otherwise specified.

8.3 HCPS reserves the right to accept price reductions from the Awarded Bidder during the term of this contract.

8.4 HCPS will not accept any bid responses with bidder escalator clauses, unless specifically stated in the solicitation specifications.

9.0 ADDENDA

9.1 All changes to the Bid Specifications will be made through appropriate Addenda issued from the Procurement Department.

9.2 Addenda notices will be posted on the Procurement Department web site at www.hcps.org, as well as eMaryland Marketplace.

9.3 No Addenda will be issued later than five (5) days prior to the date for receipt of bids except an Addendum withdrawing the request for bids or one which postpones the date for receipt of bids.

9.4 Each bidder shall ascertain prior to submitting a Bid that they have received all Addenda issued and the Bidder shall acknowledge their receipt on the Addenda Form. The Addenda Form shall be completed and returned with the Bid response. Failure to return the signed Addenda Form may be reason for rejection of the Bid.

10.0 RIGHT OF SELECTION

HCPS reserves the right to accept this bid by items or as a whole or lump sum. HCPS also reserves the right to increase or decrease the estimated quantities. HCPS reserves the right to reject any and all bids which comply with these specifications or to accept a higher bid which complies, provided that, in the judgment of HCPS the bid offered under the higher bid is in the best interest of HCPS and the additional price can be justified.

11.0 DISSEMINATION OF INFORMATION

This section intentionally omitted.

12.0 INSURANCE

Please review in detail the insurance requirements contained in the attached document. These requirements are recommended by the Maryland Association of Boards of Education Group Insurance Pool. Please have your insurance agent/company receive these insurance requirements prior to submitting a bid. Failure to comply with these insurance requirements may render the bid as non-responsive.

13.0 BID SECURITY – WHEN REQUIRED

13.1 If so, stipulated in the Advertisement, Bid Announcement, or supplementary instructions to bidders, each Proposal/Bid shall be accompanied by a Bid Bond in the dollar amount of five Percent (5%) of the Base Bid. This Bid Bond pledges that the Bidder will enter into a Contract with HCPS on the terms stated in the Solicitation and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising hereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, where required, the amount of the Bid Security/Bid Bond/Surety Bond shall be forfeited to HCPS as liquidated damages, not as a penalty. **This bond must be provided with the Proposal/Bid submission and failure to do so may be cause for rejection of the Bid as being non-responsive. The cost of the Bid Bond will be borne by the Bidder(s) in all instances.**

13.2 If a surety bond is required, it shall be written on the appropriate AIA Document, Bid Bond, unless otherwise provided in the Bidding Documents and the attorney-in-fact who executes the Bond on behalf of the surety shall affix to the Bond a certified and current copy of the power of attorney. *Individual surety bonds as detailed in State of Maryland COMAR 21.06.07.01 are also acceptable through an authorized individual surety agent.*

13.3 HCPS will have the right to retain the Bid Security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished or (b) the specified time has elapsed so that bids may be withdrawn or (c) all proposals/bids have been rejected.

13.4 All bonds must be approved by surety companies, which are in the most current Circular 570 "Surety Companies Acceptable on Federal Bonds" as issued by the U.S. Treasury, Bureau of Government Finance Operations, Division of Banking and Cash Management, Washington, D.C. 20011. If a bonding company is used that is not on this list, the Contract will be *Terminated for Default* or if the required bond is a bid bond, this is just cause for rejection of the Bid as being non-responsive.

13.5 Performance Bonds and/or Payment Bonds may be required for proposals/bids meeting the following conditions. The Award Bidder(s) of this contract may be required to submit either one or both of these bonds within ten (10) days of receipt of the Notice of Intent to Award and in accordance with the terms stated below. The cost of the Performance Bond and/or Payment Bond will be borne by the Bidder(s) in all instances.

13.5.1 Performance Bond may be required for contracts and/or awards of contracts in excess of $100,000.00 for the amount of 100% of the contract price to cover faithful performance of the Contract. Simultaneously with their delivery of the executed contract, the Award Bidder must deliver to HCPS an executed bond in the amount of one hundred percent (100%) of the accepted bid as security for the faithful performance of their contract and for the payment of all persons performing labor or furnishing materials in connection therewith, prepared on the Standard Bond Form A-311 as approved and issued by the American Institute of Architects and having as surety thereon such surety company or companies as are acceptable on bonds given to the United States Government and approved by the Harford County Public Schools and are authorized to transact business in this State. **Performance Bonds shall be made out in the name of the "Board of Education of Harford County".**

13.5.2 Payment Bonds may be required for contracts and/or awards of construction contracts in excess of $100,000.00 for the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith when required by HCPS. Payment Bonds shall be made out in the name of the "**Board of Education of Harford County**".

Board of Education of Harford County, Maryland
Procurement Department
102 South Hickory Avenue, Third Floor, Suite 310
Bel Air, Maryland 21014

GENERAL TERMS AND CONDITIONS
Construction

1.0 TERMINATIONS FOR CAUSE OR CONVENIENCE

1.1 HCPS reserves the right to terminate any contract, if in its opinion there shall be a failure at any time to perform faithfully any of its stipulations, or in case of any willful attempt to impose upon HCPS, materials, products and/or workmanship inferior to that required by the Awarded Bidder, and any action taken in pursuance of this latter stipulation shall not affect or impair any rights or claims of HCPS to damages for the breach of any covenant of the Contract by the Awarded Bidder.

1.2 Any cost and/or expense incurred under this section above shall be deducted from and paid by the Board of Education of Harford County out of such monies as may be due or become due to the Contract, if the same had been completed by the Contractor, it or its surety shall pay the amount of any excess to the Board of Education of Harford County.

1.3 The performance of work under this contract may be terminated for convenience by the Board of Education of Harford County in accordance with this clause in whole or part, whenever the Supervisor of Procurement shall determine that such termination is in the best interest of HCPS. Any such termination shall be affected by mailing to the Contractor a Notice of Termination specifying the extent to and conditions under which performance of work under the Contract is terminated and the date upon which such termination becomes effective. Upon termination of this contract in accordance with this section, the Contractor may be entitled to an equitable adjustment.

1.4 Termination for Non-Appropriation. HCPS reserves the right to terminate this contract, in whole or part, due to non-appropriation of funds or funds that are otherwise made unavailable to support continuation in any fiscal year succeeding the first fiscal year. Notification of contract termination will be given to the Contractor thirty (30) days in advance and will be in effect at the beginning of the fiscal year for which funds are not available. The Contractor may not recover anticipatory profits or costs incurred after termination.

2.0 DRUG, TOBACCO, AND ALCOHOL

All HCPS properties are "drug, tobacco, and alcohol-free zones" as designated by Local and State laws. Neither the Consultant or their employees (or sub-Consultants) are permitted to have any tobacco products, vaporizers, e-cigarettes, illegal or prescription drugs, or alcohol products on HCPS property. Use or possession of such items on HCPS property will result in immediate termination of the Agreement.

3.0 PROTEST AND APPEAL PROCESS

Any bidder objecting to the recommendation for award or the award of a contract may appeal the action to the Supervisor of Procurement by formal notification in writing within seven (7) calendar days of award. A protest must include: the name, address, and contact information of the protestor; signature of the protestor or an authorized representative of the protestor; identification of the solicitation or proposal number; detailed statement of reasons for the protest; supporting documentation to substantiate the claim; and the remedy sought. A formal written response to the appeal shall be issued within ten (10) calendar days following receipt of the formal protest. The decision of the Supervisor of Procurement may be appealed to the Superintendent of Schools within five (5) business days following receipt of decision from the Supervisor of Procurement. The decision of the Superintendent is final and conclusive.

4.0 NON-DISCRIMINATION

4.1 The Contractor shall comply with all Federal and State anti-discrimination laws in the performance of this contract.

4.2 The Board of Education of Harford County Public does not discriminate on the basis of age, ancestry/national origin, color, disability, pregnancy, gender identity/expression, marital status, race, religion, sex or sexual orientation in matters affecting employment or in providing access to programs and activities and provides equal access to the Boy Scouts and other designated youth groups.

4.3 In accordance with the requirements of Title IX of the Education Amendments of 1972 (20 U.S.C. §1681, *et seq.*), Harford County Public Schools does not discriminate on the basis of sex in any of its programs or activities or with regard to employment. Inquiries about the application of Title IX, and its implementing regulations to Harford County Public Schools may be referred to Renee McGlothlin, Harford County Public Schools Title IX Coordinator, by mail to 102 S. Hickory Avenue, Bel Air, Maryland 21014, or by telephone to 410-809-6087 or by email to Renee.McGlothlin@hcps.org or the Assistant Secretary for the Office of Civil Rights in the United States Department of Education by mail to 400 Maryland Avenue, SW, Washington, DC 20202 or by telephone 1-800-421-3481, or both.

4.4 The Awarded Bidder shall furnish, if requested by HCPS, a compliance report concerning their employment practices and policies in order for HCPS to ascertain compliance with the special provisions of this contract concerning discrimination in employment.

4.5 In the event the Awarded Bidder is deemed noncompliant with the nondiscrimination clause of this contract, this contract may be canceled, terminated, or suspended in whole or in part and the Awarded Bidder may be declared ineligible for further/future HCPS' work.

5.0 NON-HIRING OF EMPLOYEES BY AWARDED BIDDER OR HCPS

5.1 No employee of the HCPS or any unit thereof, whose duties as such employee include matters relating to or affecting the subject matter of this contract, shall, while so employed, become or be an employee of the party or parties hereby contracting with the HCPS or any unit thereof.

5.2 No employee of the Awarded Bidder or any unit thereof, whose duties as such employee include matters relating to or affecting the subject matter of this contact, shall, while so employed, become or be an employee of the party or parties hereby contracting with the Awarded Bidder or any unit thereof.

6.0 FINANCIAL DISCLOSURE

The Awarded Bidder shall comply with the provisions of Section 13-221 of the State Finance and Procurement Article, Annotated Code of Maryland, which requires that every business that enters into contracts, leases or other agreements with the State of Maryland or its agencies, including school districts, during a calendar year under which the business is to receive in the aggregate $100,000 or more, shall within thirty (30) days of the time when the aggregate value of these contracts, leases or other agreements reached $100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

7.0 POLITICAL CONTRIBUTION DISCLOSURE

Awarded Bidder shall comply with the provisions of Section 14-101 et seq. of the Election Law Article of the Maryland Code, which require that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a political subdivision of the State, including school districts, during a calendar year under which the person receives in the aggregate $10,000 or more, shall, on or before February 1 of the following year, file with the Secretary of State of Maryland certain specified information to include disclosure of political contributions in excess of $100 to a candidate for elective office in any primary or general election.

8.0 RETENTION OF RECORDS

The Awarded Bidder shall retain and maintain all records and documents relating to this contract for three (3) years after final payment by HCPS hereunder or any applicable statute of limitations, whichever is longer, and shall make them available for inspection and audit by authorized representatives of HCPS or designee, at all reasonable times.

9.0 LANGUAGE/GENDER

9.1 Bidder, proposer, offeror, vendor and contractor all have the same meaning and may be used interchangeably.

9.2 The Board of Education of Harford County is also referred to as HCPS, Harford County Public Schools, and Board of Education which may be used interchangeably.

9.3 Bid, proposal and offer all have the same meaning and can be used interchangeably.

10.0 COMPLIANCE WITH THE LAW

The Bidder hereby represents and warrants:

10.1 That it is qualified to do business in the State of Maryland and that it will take such action as, from time-to-time hereafter, may be necessary to remain so qualified.

10.2 That it shall comply with all Federal, State and Local law ordinances and legally enforceable rules and regulations applicable to its activities and obligations under this agreement.

10.3 That it shall procure, at its expense, all licenses, permits, insurance and governmental approval, if any are necessary to the performance of its obligations under this agreement.

11.0 SAFETY AND CODE REQUIREMENTS

11.1 Contractor shall comply with all Federal, State, and Local laws, ordinances and regulations pertaining to work under their charge and these shall be construed as the minimum requirements of these specifications.

11.2 The Contractor shall provide all equipment and machinery furnished and delivered to HCPS complying with the safety regulations as required by OSHA and the Maryland State Safety Health Act known as MOSHA meeting the CFR-1910 MOSHA Standard.

11.3 Safety Data Sheets (SDS) shall be submitted for all supplies, materials, equipment or any other substances furnished and/or installed under this proposal in accordance with the OSHA Hazardous Communication Standard 29 CFR 1910.101, 29 CFR 1910.1200 and 20 CFR 1926.58 or any other applicable State, Federal or Local regulation. The Contractor, when required, must submit SDS sheets to each school or facility that receives any such supplies, materials, equipment or any other substances furnished and/or installed by the Contractor.

12.0 CONTRACTOR'S OBLIGATION

12.1 The Awarded Bidder shall abide by and comply with the true intent of the specifications and not take advantage of any unintentional error or omission but shall fully complete every part as the true intent and meaning of the specifications, as decided by HCPS, and as described herein. Deviations, exceptions, alternates, etc., may render the bid as non-responsive.

12.2 The Awarded Bidder, after award and prior to starting work, may be required to submit working drawings or detailed descriptive data identified as acceptable to HCPS, which provide sufficient data to enable HCPS to judge the Awarded Bidder's compliance with the specifications.

12.3 In case of any apparent conflict between the specifications and such laws, ordinances, etc., the Awarded Bidder shall call the attention of the applicable HCPS designee(s) to such conflict for a decision before proceeding with any work.

12.4 Any deviation(s) from the specifications or scope of work must be clearly noted in detail by the Bidder, in writing, at the time of submittal of the formal bid. The absence of a written list of deviation(s) at the time of submittal will hold the Bidder accountable to HCPS to the specifications or scope of work as written by HCPS. Any deviation(s) from the specifications or statement of work without prior documented approval will be grounds for rejection of any material, equipment, and/or services when delivered and/or

performed.

12.5 The Awarded Bidder shall and will, in good professional manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this contract and said specifications and in accordance with the plans and drawings covered by this contract and any and all supplemental plans and drawings, and in accordance with the directions of the Board of Education as given from time to time during the progress of the work. The Contractor shall observe, comply with and be subject to all terms and conditions, requirements and limitations of the Contract and Specifications and shall do, carry on and complete the entire work to the complete satisfaction of the Board of Education.

12.6 Awarded Bidder may be required pursuant to the Business Regulation Article of the Maryland Code, to provide proof of Certificate of Registry.

12.7 Awarded Bidder is responsible for protecting all existing and newly installed supplies and/or equipment. Any HCPS property damaged shall be replaced or repaired to the satisfaction of HCPS.

12.8 Contractors and any of its subcontractors shall advise HCPS of its intention to use any employees which are hired or obtained from any penal, pre-release or work release program. In the event that such employees are used, notification to HCPS shall include the name and violation for each individual. The reasonable precautions, when selecting such individuals and provide strict supervision and proper safeguards. Contractor's employees are not permitted inside school buildings when the nature of the Contract is for outside work.

13.0 PROTECTION OF WORK AND PROPERTY

13.1 The Contractor will be held responsible for any and all damage to Harford County Public Schools property done or caused by the Contractor or other personnel engaged in the execution of this contract, except and unless damage, loss, injury or illness is caused by the negligence or tortious misconduct of HCPS employees. They shall be similarly responsible for all injury to any person that occurs as a result of their actions or negligence. They shall take proper safety and health precautions to protect the work, the workers, the public and the property of others. The Contractor shall also be responsible for any and all damage to adjacent property incurred in the performance of the Contract and hold Harford County Public Schools free from any and all claims for damages arising from the execution of the work.

13.2 Limit use of premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

13.3 Keep driveways and entrances serving the premises clear and available to HCPS, HCPS's employees and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

13.4 The Contractor shall at all times keep the premises free from accumulation of waste materials or rubbish caused by its employees or work, and at the completion of the work, all trash will be removed from and about the work site and all tools, scaffolding and surplus materials shall leave the area clean and neat unless more exactly specified. In case of disputes, HPCS may remove trash, rubbish, etc. and charge the cost to the Contractor.

13.5 The Awarded Bidder shall protect all HCPS property, materials, equipment, improvements, utilities, structures, and vegetation at all times. Any property or incidentals damaged during the shall be repaired or replaced by Awarded Bidder to the satisfaction of HCPS.

14.0 DIRECT DAMAGES

HCPS reserves the right to pursue any and all damages against the Awarded Bidder or against any bond or surety relating to the contract in the event of a breach of the Contract by the Awarded Bidder.

15.0 PERMITS & LICENSE

The Contractor awarded this contract must, at its expense, obtain any and all permits required by Local, State

and Federal authorities. The Contractor at the time of bid opening must be fully licensed in all trades or special areas that require a license by Local, State, Federal authorities. It is the contractor's responsibility to notify HCPS of lapses in, suspension of or termination of special permits and licenses required under the Contract.

16.0 SUBSTITUTIONS

Bids shall be based upon the materials, systems, and equipment required by the bidding documents without exception.

17.0 GUARANTEE AND WARRANTY

17.1 The Awarded Bidder shall unconditionally guarantee the materials and workmanship of all equipment and materials furnished by the Awarded Bidder, its subcontractors or suppliers for a period of at least one (1) year from the date of acceptance of the installation by HCPS. If the manufacturer warrants equipment for a period longer than one year, the Awarded Bidder shall pass through this extended warranty to HCPS.

17.2 In the event the Awarded Bidder fails to repair, replace, adjust, rectify, remedy, correct or complete the items, defects, deterioration, and/or installation, then HCPS may have the right to secure the services of another vendor to correct the work or complete the performance required by the award of this bid. The Awarded Bidder shall be solely responsible for any and all costs, expenses and monies due to the new vendor.

17.3 The Awarded Bidder must act as the manufacturer's agent for all warranty claims.

18.0 AWARDED BIDDER'S RESPONSIBILITY

18.1 Awarded Bidders may be required pursuant to the Business Regulation Article of the Maryland Code, to provide proof of Certificate of Registry.

18.2 Awarded Bidders are responsible to protect all existing and newly installed work, materials, equipment and landscaping. Any HCPS property damaged shall be replaced or repaired to the satisfaction of HCPS.

18.3 Awarded Bidders are responsible for having all employees sign-in and sign-out at the work site. Use the appropriate form provided by the school office.

18.4 Awarded Bidders are responsible for daily removal of all debris from the work site and to keep the work site tidy as work progresses. Under no circumstance shall Awarded Bidders use HCPS garbage and/or recycling dumpsters to dispose of debris.

18.5 Unless otherwise stipulated, HCPS shall provide and pay for water, heat, telephone and utilities used or consumed by the Awarded Bidder during the performance of the work or services hereunder if they are currently available at the work site. However, the Awarded Bidder shall install and pay for the costs of any temporary facilities not already in existence, which will be required during construction for accessing such water, heat and utilities.

18.6 Awarded Bidders are responsible for coordinating planned interruptions of utility service with HCPS.

18.7 Awarded Bidders are responsible for notifying HCPS of any occurrence of pre-existing condition that would prevent the completion of work as specified. Any changes in the scope of work and any resulting changes in cost shall be agreed to in writing by HCPS. HCPS assumes no responsibility for verbal changes in the Scope of Work or cost. Contract/Scope changes must be reflected in an authorized change order approved by the Supervisor of Procurement.

18.8 Awarded Bidders may be responsible at the discretion of HCPS to complete the American Institute of Architects (AIA) Abbreviated Form of Agreement between HCPS and Awarded Bidder.

18.9 Awarded Bidders are responsible to provide their own materials, tools and equipment. HCPS assumes no responsibility for vandalism or theft of Awarded Bidder's property.

18.10 At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Solicitation, Specifications, Plans and Contract Documents (including all Addenda). The failure or omission of any bidder to receive or examine any form, instrument, or document, shall in no way relieve any bidder from any obligation in respect of his bid.

18.11 Awarded Bidder shall be responsible for ensuring that employees assigned to HCPS sites, either employed by Awarded Bidder or their subcontractor(s), have successfully passed a criminal background check, to the satisfaction of Harford County Public Schools. The Awarded Bidder shall not use any employees, including subcontractor employees that are hired or obtained from any penal pre-release or work-release programs.

19.0 SAFETY AND CODE REQUIREMENTS

All materials and labor shall comply with the following requirements:

19.1 Awarded Bidder shall comply with all Federal, State, and Local laws, ordinances and regulations pertaining to work under their charge and these shall be construed as the minimum requirements of these specifications.

19.2 Awarded Bidder shall provide all equipment and machinery furnished and delivered to HCPS complying with the safety regulations as required by OSHA and the Maryland State Safety Health Act known as MOSHA meeting the CFR-1910 MOSH Standard.

19.3 Awarded Bidder shall submit Safety Data Sheets (SDS) for all supplies, materials, equipment or any other substances furnished and/or installed under this proposal in accordance with OSHA Hazardous Communication Standard 29 CFR 1910.101, 29 CFR 1910.1200 and 29 CFR 1926.58 or any other applicable state, federal, or local regulation. The Awarded Bidder must submit SDS sheets to each school or facility that receives any such supplies, materials, equipment or any other substances furnished and/or installed by the Awarded Bidder. Failure on the part of the Awarded Bidder to furnish the necessary SDS sheets will result in the withholding of final payment.

19.4 Standards are as defined in the latest issue from the following:

AABC	Associated Air Balance Council
ADC	Air Diffusion Council
AGA	American Gas Association
ADA	American's With Disabilities Act
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
ARI	Air Conditioning and Refrigeration
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BOCA	Building Officials and Code Administrators
COBA	Council of American Building Officials
CPSC	Consumer Product Safety Commission
CS	Commercial Standard
FM	Factory Mutual
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers
MSSP	Manufacturers Standards Society of the Valve and Fittings Industry
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
TEMA	Tubular Exchanger Manufacturers Association
TIMA	Thermal Insulation Manufacturers Association
UL	Underwriters Laboratories

19.5 No new, replacement, or restoration materials shall contain asbestos or asbestiform minerals in an amount greater than 0.0% as determined by Polarized Light Microscopy (PLM) as prescribed in Federal Regulation 40 CFR 763.87. For materials that are tightly bound (e.g. floor tile, roofing asphalt and felts, adhesive/mastic, caulk, glaze, etc.) and for which PLM analysis is not conclusive, transmission electron microscopy must be used for analysis. If no commercially available material meets this criterion, written authorization for use of the material shall be obtained from the HCPS Project Manager. All materials delivered to or used on HCPS property must be accompanied by a manufacturer's certification to be asbestos free, based upon criterion above. The Material Safety Data Sheet may not be used for this purpose.

19.6 No new, replacement or restoration materials shall contain lead in an amount greater than 0.00 milligrams per liter or 0.00 milligrams per kilogram. If no commercially available material meets either criterion, written authorization for use of the material shall be obtained from the HCPS Project Manager.

19.7 All Harford County codes and regulations including the latest edition of The International Building Code are relevant.

19.8 Awarded Bidder shall insure that all modifications address the provisions of the ADA.

20.0 CONCEALED OR UNKNOW CONDITIONS

In the performance of any work or services, if the Awarded Bidder encounters conditions at the Facilities that are (1) subsurface if otherwise concealed physical conditions that differ materially from those indicated on the drawings furnished by HCPS or (2) unknown physical conditions of an unusual nature that differ materially from those conditions normally found to exist and generally recognized as inherent in the construction activities if the type and character as that which is described, then the Awarded Bidder shall notify HCPS of such conditions promptly, prior to significantly disturbing the same, and in no event later than 2 days after the first observation the conditions. If such conditions differ materially and cause an increase or decrease in the Awarded Bidder's cost of, or time required for, performance of any part of the work or services, the Awarded Bidder shall be entitled to, and HCPS shall consent in writing to, an equitable adjustment in the amounts paid to the Awarded Bidder pursuant to this Agreement, the times for performance or both.

21.0 INDEMNIFICATION

21.1 To the fullest extent permitted by law, the Indemnitor shall indemnify, defend and hold the Indemnitee and its employees, agents, officials or volunteers harmless from and against any and all claims, losses, damages, expenses, causes of action and liabilities including without limitations, attorney's fees arising out of or related to the Indemnitor's occupancy or use of the Indemnitee's premises or operations incidental thereto, provided that any such claim, loss, damage, expense, cause of action or liability is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including loss of use resulting there from. Indemnitor expressly indemnifies indemnitee for the consequences of any negligent act or omission of the Indemnitor or any of the Indemnitor's employees, agents, officials or volunteers or anyone for whose acts the Indemnitor may be liable, unless such act or omission constitutes gross negligence or willful misconduct.

21.2 In claims against any person or entity indemnified within this indemnification by an employee of the Awarded Bidder, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Awarded Bidder or a subcontractor under Workers' Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

21.3 The obligations of the Awarded Bidder within this indemnification shall not extend to the liability of the Construction Manager, Architect, their consultants and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or specifications, or (2) the giving of or the failure to give directions or instructions by the Construction Manager, Architect, their consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

22.0 ACCESS TO FACILITIES FOR PERFORMANCE

From the date hereof and throughout the term of this agreement, the Awarded Bidder shall have reasonable access to the Facilities and relevant personnel of HCPS to perform its obligations and to investigate performance of the equipment, systems and operations of the Facilities.

23.0 SUSPENSION OF WORK

23.1 HCPS may unilaterally order the Awarded Bidder in writing to suspend, delay, or interrupt all or any part of the work for such period of time as may be appropriate for the convenience of HCPS. Such suspensions, delays or interruptions should be for less than sixty (60) days unless there are extenuating circumstances.

23.2 The times required, and the completion of work shall be equitably adjusted to take into account the period of such suspensions, delay or interruption.

23.3 HCPS will compensate the Awarded Bidder only for the cost(s) to re-mobilize to the Facilities any equipment that had to be leased or rented for the suspension period that was critical to the operation of the Facility and any offsite storage cost(s) besides the Awarded Bidder's facility that had to be used to store materials related to the work. The Awarded Bidder shall, at the suspension of work, notify the HCPS of any such charges stating the monetary damages that will incur and shall document weekly in writing to the HCPS the cumulative costs during the delay period. In no way will any approved delay effect the warranty period regarding any accepted completion by the HCPS relating to equipment installed by the Awarded Bidder, its subcontractors and suppliers.

24.0 DELAYS, EXTENSIONS OF TIME

24.1 The Bidder agrees to perform all work and provide all supplies or materials, in accordance with all the sections of this bid in a timely, continuous and diligent manner in order to comply with the time requirements set forth in this bid and/or the Contract. The Bidder acknowledges and agrees that the only party that may grant a legally binding time extension or agree to a substitution of products, materials, equipment and/or supplies is the Supervisor of Procurement. Any and all time extensions and/or changes/substitutions of products, materials, equipment and/or supplies must be requested in writing by the Bidder before the extension and/or change takes place and approved in writing by HCPS.

24.2 Any delays by the Awarded Bidder to commence work will not change the Completion Date or relinquish the Awarded Bidder from the responsibility of meeting the established completion requirements by the Completion Date unless written permission has been granted from the Supervisor of Procurement.

25.0 HAZARDOUS MATERIALS

25.1 The Awarded Bidder's work and other services pursuant to or in connection with this Agreement includes work connected and associated with asbestos, lead, polychlorinated biphenyl ("PCB"), fluorescent light bulbs, or other hazardous materials (hereinafter, collectively, "Hazardous Materials"). The Awarded Bidder shall be required to perform identification, abatement, cleanup, control, and removal of Hazardous Materials. HCPS warrants and represents that, except as set forth in the Technical Proposal, there are no Hazardous Materials on the Facilities that will in any way affect the Awarded Bidder's work or any other services and HCPS has disclosed to the Awarded Bidder the existence and location of any Hazardous Materials in all areas within which the Awarded Bidder will be performing any part of the work or other services. The existence or location of any Hazardous Materials that have been disclosed by HCPS to the Awarded Bidder prior to the execution hereof, or that were otherwise identified in the Technical Specifications, shall be the exclusive responsibility of the Awarded Bidder.

25.2 Should the Awarded Bidder become aware of or suspect the presence of Hazardous Materials, other than already disclosed by HCPS within the Technical Specifications, the Awarded Bidder shall immediately stop work in the affected area and notify HCPS. HCPS will be responsible for taking any and all actions necessary to correct the condition in accordance with all applicable laws and regulations. The Awarded Bidder shall be required to resume performance of the work or any HCPS requested work

in the affected areas only in the absence of Hazardous Materials or when the affected area has been rendered harmless. Except as set forth in the Technical Specifications, the Awarded Bidder shall not be obligated to transport or handle Hazardous Material, to provide any notices to any governmental authority or agency, or to inspect or examine the Facilities for the presence of Hazardous Material.

26.0 LEGISLATED BID REQUIREMENTS

Award of contracts over $50,000 shall be awarded to the lowest responsive and responsible bidder who conforms to the Specifications with consideration given to: (1) the quantities involved, (2) the time required for delivery, (3) the purpose for which it is required, (4) the competency and responsibility of the Bidder, (5) the ability of the Bidder to perform satisfactory service, and (6) the plan for utilization of minority contractors (certified by M-DOT). [REF: State of Maryland Senate Bill 202, Section 5-112-Education Article, Sub. C effective 7-1-00]

27.0 PREVAILING WAGE-SCHOOL CONSTRUCTION

If the estimated cost of the Contract is $250,000 or more and if State funds will be 25% or more, the Contract shall meet the prevailing wage requirements contained in Chapter 57, 2020 Md. Laws, effective October 1, 2021. Prevailing wage rates are required for the appropriate trades included in the project and must be reflected in the Bids submitted. HCPS is required to include a notation in the Bid Announcement and advertisement that, “PREVAILING WAGE RATES ARE APPLICABLE TO THIS PROJECT”. Questions regarding the prevailing wage rate process or procedure may be directed to the Administrator of the Prevailing Wage Program, State of Maryland.

28.0 ROYALTIES AND PATENTS

The Awarded Bidder shall pay all royalties and license fees. The Awarded Bidder shall defend suits or claims for infringement of patent rights and shall hold HCPS, Construction Manager, and/or the Architect/Engineer/Designer harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Awarded Bidder has reason to believe that the required design process or product is an infringement of a patent, the Awarded Bidder shall be responsible for such loss unless such information is promptly furnished to HCPS and/or the Architect/Engineer/Designer.

29.0 ILLEGAL IMMIGRANT LABOR

The use of illegal immigrant labor to fulfill contracts solicited by HCPS is in violation of the law and is strictly prohibited. Contractors and subcontractors must verify employment eligibility of workers in order to assure that they are not violating Federal/State/Local laws regarding illegal immigration. A compliance audit may be conducted.

30.0 FOREIGN LANGUAGE TRANSLATOR REQUIREMENT

30.1 HCPS requires an awarded bidder to have on site, a full-time interpreter that is fluent in speaking and understanding an employee’s native language if the Contractor has on site an employee that does not speak English.

30.2 Failure of an awarded bidder to have on site, full time, an interpreter that is fluent in speaking and understanding an employee’s native language for those employees that do not speak English is reason for immediate Termination for Cause.

31.0 EMPLOYMENT OF CHILD SEX OFFENDERS AND OTHER CRIMINAL OFFENDERS

31.1 **If a child sex offender, as determined by the definitions contained in the Criminal Law Article of the Annotated Code of Maryland, is employed by the Awarded Bidder, the Awarded Bidder is prohibited from assigning that employee to perform management, delivery, installation, repair, construction or any other type of services on any HCPS property, including the project property. Violation of this provision may result in Termination for Cause.**

31.2 Contractor acknowledges and agrees that, pursuant to Section §6-113 of the Education Article of Maryland Code, Contractor is prohibited from knowingly assigning or permitting it’s Subcontractors from

knowingly assigning any of the Contractor's or Subcontractor's employees to work in, on or about school premises if such employee may or would have direct, unsupervised and uncontrolled access to children if the employee has been convicted of, pled guilty or *nolo contendere*, to any of the following crimes.

31.2.1 A sexual offense in the third or fourth degree under §3-307 or §3-308 of the Criminal Law Article of the Maryland Code or an offense under the laws of another state that would constitute an offense under §3-307 or §3-308 of the Criminal Law Article if committed in Maryland;

31.2.2 Child sexual abuse under §3-602 of the Criminal Law Article, or an offense under the laws of another state that would constitute child sexual abuse under §3-602 of the Criminal Law Article if committed in Maryland; or

31.2.3 A crime of violence as defined in §14-101 of the Criminal Law Article, or an offense under the laws of another state that would be violation of §14-101 of the Criminal Law Article if committed in Maryland, including: (1) abduction; (2) arson in the first degree; (3) kidnapping; (4) manslaughter, except involuntary manslaughter; (5) mayhem; (6) maiming; (7) murder; (8) rape; (9) robbery; (10) carjacking; (11) armed carjacking; (12) sexual offense in the first degree; (13) sexual offense in the second degree; (14) use of a handgun in the commission of a felony or other crime of violence; (15) child abuse in the first degree; (16) sexual abuse of a minor; (17) an attempt to commit any of the crimes described in items (1) through (16) of this list; (18) continuing course of conduct with a child under §3-315 of the Criminal Law Article; (19) assault in the first degree; (20) assault with intent to murder; (21) assault with intent to rape; (22) assault with intent to rob; (23) assault with intent to commit a sexual offense in the first degree; and (24) assault with intent to commit a sexual offense in the second degree.

31.3 Direct unsupervised and uncontrolled access with students is prohibited. If you, as the Contractor/Site Supervisor, witness or suspect your employee(s) entering into a student area, action must be taken immediately to rectify the situation.

31.4 Section §11-722 of the Criminal Procedure Article of the Maryland Code prohibits any person with a contract with a local Maryland school system from knowingly employing an individual to work at the school if the individual is registered as a sex offender pursuant to Section §11-704 of the Criminal Procedure Article. Violation of this paragraph may result in termination of the agreement at HCPS's discretion.

32.0 CRIMINAL BACKGROUND CHECKS FOR CONTRACTORS

Amendments to Section §5-561 of the Family Law Article of the Maryland Code effective July 1, 2015, require each Contractor and Sub-Contractor with a local school system to ensure that any individuals in their work force undergo a criminal background check and fingerprinting if such individual will work in, on or about school premises and the individual will have direct, unsupervised and uncontrolled access to children.

The term **"work force"** means any of the Contractor's employees or the Contractor's Sub-Contractors and their employees.

Contractor shall cause any member of Contractor's work force to undergo a criminal history background check, including fingerprinting, if such work force member may or will work in, on or about school premises and may, or will have direct, unsupervised and uncontrolled access to children. Such background check and fingerprinting shall meet the requirements of Section §5-560 to §5-569 of the Family Law Article of the Maryland Code.

The cost of such criminal background check and fingerprinting shall be paid by Contractor.

HCPS shall have the right, in its sole discretion, to prohibit any individual from performing any work at, or in or about school premises based on such individual's criminal background check.

32.1 IN ADDITION to the above requirements, Contractors shall comply with the requirements of House Bill 486 passed by the General Assembly in 2019, regarding screening of applicants for employment.

32.1.1 Effective July 1, 2019
32.1.2 MSDE Guidance for House Bill 486 – Child Sexual and Sexual Misconduct Prevention) can be

found online at www.marylandpublicschools.org.

32.1.3 Submission of Section 000325 Contract Affidavit (HB 486/SB 541Compliance) is required to be submitted prior to award of contract.

33.0 MINORITY BUSINESS ENTERPRISE PARTICIPATION

Minority participation is encouraged on all contracts and non-minority prime contractors are encouraged to use minority subcontractors. Specific requirements may apply to certain bids when State of Maryland School Construction Program funds are utilized.
When applicable, a special section in the bid documents will be included as "Minority Business Enterprise Procedures". When this requirement is included in the bid documents the required certificate, waiver forms, schedule for participation forms must be submitted. Failure to submit said documents may result in a determination that the Bid is non-responsive. If the Contractor is deemed the apparent low bidder, the Minority Business Enterprise documentation described in the bid documents must be submitted within ten (10) working days of receiving notification of potential award.

For projects estimated to be over $50,000, "The Bidder or Offeror is required to submit with its bid or proposal a completed Attachment 1A - MBE Utilization and Fair Solicitation Affidavit and MBE Participation Schedule, as described in the solicitation documents. If Attachment 1A, MBE Utilization and Fair Solicitation Affidavit and MBE Participation Schedule, are not submitted with the Bid at the time of opening, the Bid will be deemed non-responsive and not considered. The Bidder or Offeror recognizes that their efforts made to initiate contact to solicit and to include MBE firms in this project will be reviewed carefully and evaluated based upon the actions taken by them prior to and up to 10 days before the Bid or Proposal opening.

The Contractor shall perform the Contract in accordance with the representations made in Attachment 1A – Minority Business Enterprise Utilization and Fair Solicitation Affidavit and MBE Participation Schedule submitted as part of the Bid or Proposal. Failure to perform the Contract as specified and presented in the Bid or Proposal submission without prior written consent of the Owner shall constitute a violation of a material term of the Contract.

34.0 LABOR AND RATES OF PAY

34.1 The Awarded Bidder agrees that it shall abide by all applicable provisions of Federal and State law and regulation pertaining to workplace conditions, child labor and that all employees will be treated with dignity and respect.

34.2 The Awarded Bidder agrees to comply with all applicable Federal and State law and regulation relating to payment of wages.

35.0 PROCUREMENT-INVESTMENT ACTIVITIES IN IRAN

The Awarded Bidder agrees that it shall abide by and comply with Section 17-701 et seq. of the State Finance and Procurement Article of the Maryland Code, regarding business in Iran.

36.0 CONTRACT

The Bid with respect to all items accepted, addenda, agreements and all papers and documents accompanying the same, including these general and special conditions shall constitute the Formal Contract between the Bidder and HCPS.

37.0 TAXES

37.1 Materials, which are incorporated into work under formal or informal contracts, are not exempt from the Maryland State Sales or Use Tax. Awarded Bidders shall be responsible for paying such taxes when purchasing materials. HCPS tax-exempt certificates cannot be used by contract awardees.

37.2 No charge will be allowed for Federal, State or municipal sales and excise taxes from which HCPS is exempt. The price bid shall be net and shall not include any tax. Exemption certificates, if required, will be furnished on forms provided by the Bidder. HCPS is specifically exempt from retail sales tax under

Maryland Certificate 3000120-1. Harford County Public Schools, Maryland is a political organization of the State of Maryland under the "Code of Maryland-Title 13A". The Internal Revenue Code Section 501 specifically exempts political organizations from Federal Income Tax. Harford County Public Schools, Maryland Federal Tax ID is #52-6000955.

38.0 DELIVERIES

All supplies and/or materials must be held by the Awarded Bidder until needed at the site unless they can be stored in the area in which the work is to be done and that area has been closed to occupant usage. The Awarded Bidder shall obtain the permission of the HCPS representative regarding any needed storage of materials and equipment. Such storage shall be done in such a manner as not to interfere with the building schedule. The Awarded Bidder shall be responsible for any and all accidents caused by negligence from this source. HCPS does not accept responsibility for losses of material or equipment, regardless of approval to store, in any institution's facilities or grounds.

39.0 INSPECTIONS/CORRECTION OF WORK

All work and materials, all processes of manufacturer, and all methods of construction shall be at all times and places subject to the inspection of HCPS who shall be the final judge of the quality and suitability of the work, materials, process of manufacturer and methods of construction for the purposes for which they are contracted and used. Should they fail to meet the necessary approval, they shall be corrected, made good or replaced at the Contractor's expense, and to the complete satisfaction of HCPS. Rejected material shall be immediately removed from the site. Failure to correct the work shall be grounds for immediate termination of the Contract.

40.0 COMPLIANCE WITH SPECIFICTIONS

40.1 The Awarded Bidder shall abide by and comply with the true intent of the specifications and not take advantage of any unintentional error or omission but shall fully complete every part as the true intent and meaning of the drawings and specifications as described.

40.2 The Awarded Bidder, after award and prior to starting work, may be required to submit working drawings or detailed descriptive data identified as acceptable to HCPS, which provide sufficient data to enable HCPS to judge the Awarded Bidder's compliance with the specifications.

40.3 Where the requirements of the specifications call for higher grade and are not in conflict with the laws, ordinances, etc., the specifications shall govern.

40.4 Where the requirements of the laws, ordinances, etc., are mandatory, they shall govern.

40.5 In case of any apparent conflict between the specifications and such laws, ordinances, etc., the Awarded Bidder shall call the attention of the applicable HCPS designee(s) to such conflict for a decision before proceeding with any work.

40.6 Any deviations to the Specifications or Statement of Work must be clearly noted in detail by the Bidder/Offeror, in writing, at the time of submittal of the formal proposal. Any deviations, alternations or changes to the bid document or from the specifications as written may result in rejection of the Bidder's/Offeror's proposal or materials delivered.

41.0 BILLING AND PAYMENT

41.1 Each invoice shall list the purchase order number or contract number of HCPS and the items on the invoice shall be listed in the same order as on the purchase order. The original invoice shall be submitted to the Accounts Payable email address at APInvoice@hcps.org, unless otherwise specified.

41.2 Payment in full will only be made upon final acceptance of items as shown on Purchase Order. Partial payments may be made if partial shipments have been made and received.

41.3 Standard HCPS payment terms are net thirty (30) days.

41.4 HCPS will not pay freight bills, unless stated otherwise. Delivery shall be F.O.B., to the destination(s) as

noted on Purchase Order.

42.0 GOVERNING LAW AND DISPUTE RESOLUTION

42.1 The Bid shall be construed in accordance with, and interpreted under, the laws of the State of Maryland. Any lawsuits arising out of such bid shall be filed in the appropriate State Court located in Harford County, Maryland.

42.2 Alternative Dispute Resolution (ADR) may be used at HCPS's sole discretion, but HCPS is not obligated to utilize ADR.

43.0 CONFLICTS OF INTEREST

No employee of Harford County Public Schools shall engage in or have a financial interest in any Contract that conflicts or raises a reasonable question of conflict with their duties and responsibilities. Further, Harford County Public Schools may, by written notice of default to the supplier, terminate in whole or in part the Contract if a determination is made that obtaining the Contract was influenced by an employee of Harford County Public Schools having received a gratuity, or promise thereof, in any way or form.

44.0 ORDER OF PRECEDENCE

In the event of an inconsistency among provisions of this solicitation, the inconsistency shall be resolved by the following order of precedence:

- Specifications
- Terms and Conditions
- General Provisions

45.0 IT ACCESSIBILITY PROGRAM

45.1 Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended in 1998, is a federal law that requires agencies to provide individuals with disabilities equal access to electronic information and data comparable to those who do not have disabilities, unless an undue burden would be imposed on the agency. The Section 508 standards are the technical requirements and criteria that are used to measure conformance within this law. More information on Section 508 and the technical standards can be found at www.section508.gov.

45.2 Section 508 requires agencies, during the procurement, development, maintenance, or use of ICT, to ensure that individuals with disabilities have access to and use of ICT information and data comparable to the access and use afforded to individuals without disabilities (i.e., “ICT accessibility”), unless an undue burden would be imposed on the agency. The Section 508 standards are the technical requirements and criteria that are used to measure conformance with the law and incorporate the W3C Web Content Accessibility Guidelines (WCAG) 2.2.

46.0 TECHNOLOGY-BASED INSTRUCTIONAL PRODUCTS

46.1 HCPS is committed to ensuring that digital technology (hardware, instructional software, online resources, and computer-based equipment) is accessible to individuals with disabilities. The Vendor guarantees that all digital tools supplied under this contract meet the accessibility requirements of the Web Content Accessibility Guidelines (“WCAG”) 2.2 Level AA and conform to the most recent Section 508 standards for information technology accessibility under the federal Rehabilitation Act of 1973. “Digital tool” is defined pursuant to Md. Code Ann., Educ., § 7-910.

46.2 All online platforms must conform to the guidelines for accessibility as set forth in the WCAG version 2.2 W3C WCAG 2.2 Now Available (minimum Level AA conformance). HCPS will only consider vendors whose products conform to these standards. Conformance to the specified standards can be documented through the submission of an up-to-date, complete, and accurate Accessibility Conformance Report (ACR). The ACR must address the leading ICT accessibility standards: Section 508 (U.S.), EN 301 549 (EU), and W3C/WAI WCAG. The ACR must include the latest version of the Voluntary Product Accessibility Template (VPAT®), which can be obtained from the Information

Technology Industry Council (ITI) website (https://www.itic.org/).

46.3 For digital tools, vendors are required to submit an accessibility conformance report that includes a Voluntary Product Accessibility Template for any invitation for bids, requests for proposals, procurement contracts, grants, or modifications to contracts or grants. The accessibility conformance report must explain how information and communication technology products, including software, electronic content, and support documentation, conform to the most recent ICT accessibility standards: Section 508 (U.S.), EN 301 549 (EU), and W3C/WAI WCAG. The instructions and the required forms can be found at the General Services Administration (GSA) Section 508 website at https://www.section508.gov/sell/how-to-create-acr-with-vpat/.

46.4 **Vendor Notice of Equivalent Access Standards**

In accordance with Md. Code Ann., Educ., § 7-910, "equivalent access" includes the ability to receive, use, and manipulate information and operate controls necessary to access and use information technology, including by nonvisual means, so that a student with disabilities can access the same services as a student without disabilities with substantially equivalent ease of use.

"Equivalent access" includes:

1. Keyboard controls used for input and synthesized speech;
2. Braille; and
3. Other audible or tactile means used for output.

"Nonvisual access" means the ability to receive, use, and manipulate information and operate controls necessary to access information and communications technology through keyboard controls, synthesized speech, braille, or other methods not requiring sight.

46.5 **Accessibility Indemnification and Guarantees**

46.5.1 The Vendor agrees to indemnify and hold harmless HCPS from any costs, expenses, liabilities, or obligations arising from accessibility-related issues involving the digital tools provided under this contract. This indemnification includes the defense of any legal action or proceedings alleging non-compliance with federal or State of Maryland accessibility laws and regulations and payment of any resulting liabilities. This clause will survive the termination of the contract.

46.5.2 Vendors failing to meet the equivalent access standards established under Subsection (a)(2) of Section 508 of the federal Rehabilitation Act of 1973 or WCAG 2.2 Level AA may face civil penalties set forth in Md. Code Ann., Educ., § 7-910.

46.5.3 For all technology based instructional products, online platforms, and digital tools, Vendors must maintain and improve their digital accessibility in compliance with evolving standards and best practices. Vendors will provide a listing of timelines for expected improvements to the programs. Vendors will establish a mechanism for users to report accessibility issues and ensure prompt resolution of reported problems.

46.6 **Third-Party Technology**

The Vendor acknowledges that supplying third-party technology does not exempt the Vendor from ensuring product compliance with this clause. The Vendor bears sole responsibility for determining the accessibility of such technology and must ensure that it can be edited or remediated as necessary to comply with accessibility standards.

47. FORCE MAJEURE

47.1 A party shall not be liable for any failure of or delay in the performance of this agreement for the period that such failure or delay is beyond the reasonable control of a party, materially affects the performance of any of its obligations under this agreement and could not reasonably have been foreseen or provided against but will not be excused for failure or delay resulting from only general economic conditions or other general market effects.

47.2 The list of events to be included is a matter of negotiation between the parties. Such causes may include, but are not limited to, acts of God, nature or the public enemy, terrorism, invasion, insurrection, order of court, judge, or civil authority, strike, stoppage of labor, riot, and unusually severe weather, significant fires, floods, earthquakes, storms, epidemics, pandemics, quarantine restrictions, strikes, freight embargos, government regulation, or governmental authorities, and delays which are not caused by any act or omission.

47.3 If either party is delayed by force majeure, the time of contract completion may be extended by contract modification, for a period of time equal to that delay caused under this condition. HCPS may also consider requests for price increase for raw materials that are directly attributable to the cause of delay. HCPS reserves the right to cancel the contract and/or purchase materials, equipment or services from the best available source during the time of force majeure, and Contractor shall have no recourse against HCPS. Further, except for payment of sums due, neither party shall be liable to the other or deemed in default under this contract, if and to the extent that such party's performance of this contract is prevented by reason of force majeure as defined herein.

Board of Education of Harford County, Maryland
Procurement Department
102 South Hickory Avenue, Third Floor, Suite 310
Bel Air, Maryland 21014

INSURANCE REQUIREMENTS
Construction General

1. **General Insurance Requirements**

1.1 The Vendor shall not commence any supply, delivery or installation of any products or materials purchased by the Board of Education of Harford County (the Board) under this Contract until the Vendor has obtained at the Vendor's own expense all of the insurance as required hereunder and such insurance has been approved by the Board; nor shall the Vendor allow any Subcontractor to commence work on any subcontract until all insurance required of the Subcontractor has been so obtained and approved by the Vendor. Approval of insurance required of the Vendor will be granted only after submission to the Board of original certificates of insurance signed by authorized representatives of the insurers or, at the Board's request, certified copies of the required insurance policies.

1.2 Insurance as required hereunder shall be in force throughout the term of the Contract and, in accordance with 2.1.1.iii., for two years after final payment by the Board under this Contract. Original certificates signed by authorized representatives of the insurers or, at the Board's request, certified copies of insurance policies, evidencing that the required insurance is in effect, shall be maintained with the Board throughout the term of the Contract and for two years after final payment by the Board under this Contract.

1.3 The Vendor shall require all Subcontractors to maintain during the term of the Contract commercial general liability insurance, business auto liability insurance, and workers compensation and employers liability insurance to the same extent required of the Vendor in 2.1.1, 2.1.2 and 2.1.3 unless any such requirement is expressly waived or amended by the Board in writing. If any Subcontractor is storing, transporting, and/or delivering the products or materials purchased by the Board under this Contract, the Vendor shall require such Subcontractor(s) to maintain during the term of the Contract transportation (cargo) insurance and employee dishonesty insurance to the same extent required of the Vendor in 3.1 and 3.2. The Vendor shall furnish Subcontractors' certificates of insurance to the Board immediately upon request.

1.4 All insurance policies required hereunder shall be endorsed to provide that the policy is not subject to cancellation, non-renewal or material reduction in coverage until sixty (60) days prior written notice has been given to the Board.

1.5 No acceptance and/or approval of any insurance by the Board shall be construed as relieving or excusing the Vendor from any liability or obligation imposed upon the Vendor by the provisions of this Contract.

1.6 If the Vendor does not meet the insurance requirements of this Contract, the Vendor shall forward a written request to the Board for a waiver in writing of the insurance requirement(s) not met or approval in writing of alternate insurance coverage, self-insurance, or group self-insurance arrangements. If the Board denies the request, the Vendor must comply with the insurance requirements as specified in this Contract.

1.7 All required insurance coverages must be underwritten by insurers allowed to do business in the State of Maryland and acceptable to the Board. The insurers must also have a policyholders' rating of "A-" or better, and a financial size of "Class VII" or better in the latest evaluation by A. M. Best Company, unless Board grants specific approval for an exception. The Board hereby grants specific approval for the acquisition of workers compensation and employers liability insurance from the Injured Workers Insurance Fund of Maryland.

1.8 Any deductibles or retentions in excess of $10,000 shall be disclosed by the Vendor, and are subject to Board's written approval. Any deductible or retention amounts elected by the Vendor or imposed by the Vendor's insurer(s) shall be the sole responsibility of the Vendor.

1.9 Any and all return premiums and/or dividends for insurance or coverage directly charged to the Board by the Vendor in connection with this Contract shall belong to and be payable to the Board.

1.10 If the Board is damaged by the failure or neglect of the Vendor to purchase and maintain insurance as described and required herein, without so notifying the Board, then the Vendor shall bear all reasonable costs properly attributable thereto.

2. **Vendor's Liability Insurance**

2.1 The Vendor shall purchase and maintain the following insurance coverages at not less than the limits specified below or required by law, whichever is greater:

2.1.1 **Commercial general liability insurance** or its equivalent for bodily injury, personal injury and property damage including loss of use, with minimum limits of:

$1,000,000	Each Occurrence;
$1,000,000	Personal and Adv Injury;
$2,000,000	General Aggregate; and
$2,000,000	Products/Completed Operations Aggregate

This insurance shall include coverage for all of the following:

i. Liability arising from premises and operations;
ii. Liability arising from the actions of independent contractors;
iii. Liability arising from products and completed operations with such coverage to be maintained for two years after final payment by the Board under this Contract; and
iv. Contractual liability protection for the Vendor from bodily injury and property damage claims arising out of liability assumed under this Contract.

2.1.2 **Business auto liability insurance** or its equivalent with a minimum limit of **$1,000,000** per accident and including coverage for all of the following:

i. Liability arising out of the ownership, maintenance or use of any auto (if no owned autos, then hired and non-owned autos only); and
ii. Automobile contractual liability.

2.1.3 **Workers compensation insurance** or its equivalent with statutory benefits as required by any state or Federal law, including standard "other states" coverage; employers liability insurance or its equivalent with minimum limits of:

$100,000	Each accident for bodily injury by accident;
$100,000	Each employee for bodily injury by disease; and
$500,000	Policy limit for bodily injury by disease.

2.1.4 **Umbrella excess liability** or excess liability insurance or its equivalent with minimum limits of:

$5,000,000	Per occurrence;
$5,000,000	Aggregate for other than products/completed operations and auto liability; and
$5,000,000	Products/completed operations aggregate.

And including all of the following coverages on the applicable schedule of underlying insurance:

i. Commercial general liability;
ii. Business auto liability; and
iii. Employers liability

2.1.5 **Contractors pollution liability insurance** or its equivalent for bodily injury, property damage, including loss of use, and clean -up costs on and off the Project site, with minimum limits of:

$ 1,000,000 Each Pollution Incident; and
$ 2,000,000 Annual Aggregate.

2.1.6 The Board of Education of Harford County and its elected and appointed officials, officers, employees and authorized volunteers shall be named as additional insureds on the Vendor's commercial general liability insurance and umbrella excess or excess liability insurance policies, if any, with respect to liability arising out of the products and/or materials, their installation or delivery, or related services provided under this Contract by Vendor. Such coverage shall extend to cover the additional insured(s) for liability arising out of the following:

i. On-going operations;
ii. Board's general supervision of installation, delivery and/or other services as provided by the Vendor under this Contract; and
iii. Products and completed operations.

The commercial general liability policy and the umbrella excess liability or excess liability policies, if required herein, must include additional insured language, which shall afford liability coverage for all of the exposures listed above in i., ii. and iii., as follows:

"The Board of Education of Harford County and its elected and appointed officials, officers, employees and authorized volunteers are named as additional insureds on this commercial general liability insurance with respect to liability arising out of the services provided by the Named Insured under Contract:

_____

(Enter specific identifying information such as project name, Board's contract number and/or date of contract)."

<u>Special Notes:</u> ISO form CG 2026 12/19 or its Equivalent, entitled "Additional Insured – Owners, Lessees or Contractors – Scheduled Person or Organization" (previously Forms A and B respectively) are <u>NOT ACCEPTABLE</u>. ISO form CG 2026 entitled "Additional Insured – Designated Person or Organization" <u>or</u> a manuscript endorsement with the above wording is required.

2.1.7 Insurance or self-insurance provided to the Board of Education of Harford County and its elected and appointed officials, officers, employees and authorized volunteers under any Vendor's liability insurance of self-insurance required herein, including, but not limited to, umbrella and excess liability or excess liability policies, shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of insurance or self-insurance. (Any cross suits or cross liability exclusion shall be deleted from Vendor's liability insurance policies required herein.)

2.1.8 Insurance or self-insurance provided to the Board of Education of Harford County and its elected and appointed officials, officers, employees and authorized volunteers as specified herein shall be primary, and any other insurance, self-insurance, coverage or indemnity available to the Board and its elected and appointed officials, officers, employees and authorized volunteers shall be excess of and non-contributory with insurance of self-

insurance provided to the Board and its elected and appointed officials, officers, employees and authorized volunteers as specified herein.

2.2 If any liability insurance purchased by the Vendor has been issued on a "claims made" basis, the Vendor must comply with the following additional conditions:

i. The Vendor shall agree to provide certificates of insurance evidencing the above coverages for a period of two years after final payment by the Board under this Contract. Such certificates shall evidence a retroactive date no later than the inception date of this Contract; or

ii. The Vendor shall purchase an extended (minimum two years) reporting period endorsement for each such "claims made" policy in force as of the expiration or termination date of this Contract and evidence the purchase of this extended reporting period endorsement by means of a certificate of insurance or a copy of the endorsement itself. Such certificate or copy of the endorsement shall evidence a retroactive date no later than the inception date of this Contract.

3. **Vendor's Property Insurance**

3.1 The Vendor (or Subcontractor) storing, transporting and/or delivering the products or materials purchase by the Board under this Contract shall purchase and maintain transportation (cargo) insurance on incoming goods in its care, custody or control, while such property is being loaded, is in transit, is being unloaded and until such time property is set at its final destination.

Such insurance shall value incoming goods in transit at the amount of the selling invoice plus prepaid or advanced freight charges. Property not under invoice shall be valued at the cost to repair or replace the lost or damaged incoming goods. Such insurance shall be written at per conveyance and per occurrence limits equal to or in excess of the total selling price value of the largest shipment of incoming goods purchased under this Contract or at other limits acceptable to the Board.

3.2 The Vendor (or Subcontractor) storing, transporting and/or delivering the products or materials purchased by the Board under this Contract shall purchase and maintain blanket employee dishonesty insurance, which shall pay for loss of the products or materials purchased by the Board under this Contract when caused by the dishonest acts of the Vendor's (or subcontractor's) employees, at a limit equal to or in excess of the total selling price value of the largest shipment of incoming goods purchased under this Contract or at another limit acceptable to the Board.

3.3 The Vendor (or Subcontractor) storing, transporting and/or delivering the products or materials purchased by the Board under this Contract shall be responsible for payment of any deductibles applicable under this transportation insurance, employee dishonesty insurance or other property insurance applicable to the incoming goods.

4. **Indemnification**

To the fullest extent permitted by law, Vendor agrees to defend, indemnify, pay on behalf of and save harmless the Board of Education of Harford County, its elected and appointed officials, agents, employees and authorized volunteers against any and all claims, liability, demands, suits or loss, including attorneys' fees and all other costs connected therewith, arising out of or connected to the supply, delivery or installation of any products or materials provided by Vendor under this Contract.

5. **Waiver of Subrogation**

To the fullest extent permitted by law, the Vendor and its invitees, employees, officials, volunteers, agents and representatives waive any right of recovery against the Board of Education of Harford County for any and all claims, liability, loss, damage, costs or expense (including attorneys' fees) arising out of the supply,

delivery or installation of any products or materials provided by Vendor under this Contract. Vendor specifically waives any right of recovery against the Board and its elected and appointed officials, officers, volunteers, agents and employees for personal injury (and any resulting loss of income) suffered while working on behalf of the Board as an independent contractor. Such waiver shall apply regardless of the cause of origin of the injury, loss or damage, including the negligence of the Board and its elected and appointed officials, officers, volunteers, agents and employees. The Vendor shall advise its insurers of the foregoing.

6. **Acknowledgment of Vendor's Independent Contractor Status and no Coverage For Vendor Under Board's Workers Compensation Coverage**

Vendor hereby acknowledges its status as an independent contractor while supplying, delivering or installing products or materials on behalf of the Board and that the Board's workers compensation coverage or self-insurance is not intended to and will not respond to cover any medical or indemnity loss arising out of injury to the Vendor or its employees during the Vendor's provision of goods or services to the Board. To the fullest extent permitted by law, the Vendor specifically waives any right of recovery against the Board and its elected and appointed officials, officers, volunteers, agents and employees for personal injury (and any resulting loss of income) suffered during the Vendor's provision of goods or services as an independent contractor for the Board. Such waiver shall apply regardless of the cause of original of the injury, loss or damage, including the negligence of the Board and its elected and appointed officials, officers, volunteers, agents and employees. The Vendor shall advise its insurers of the foregoing.

7. **Damage To Property of The Vendor And Its Invitees**

To the fullest extent permitted by law, the Vendor shall be solely responsible for any loss or damage to property of the Vendor or its invitees, employees, officials, volunteers, agents and representatives while such property is on, at or adjacent to the premises of the Board.

HARFORD COUNTY PUBLIC SCHOOLS
102 South Hickory Avenue
Bel Air, MD 21014

BID SPECIFICATIONS

BID #25-JHP-015

Outdoor Freezer and Loading Dock Extension at
Church Creek Elementary School (Re-Advertisement)

1. INTENT

1.1 These specifications in addition to and/or in place of similar paragraphs in the Board of Education of Harford County (hereafter referred to as Harford County Public Schools or HCPS), Instruction to Bidders, are intended to furnish all necessary permits, plant, labor, equipment, materials, supervision, tools, insurance, services, and all related incidentals required to furnish, deliver, and install a new walk-in outdoor freezer and loading dock extension at Church Creek Elementary School located at 4299 Church Creek Road, Belcamp, MD 21017.

1.2 It is the intent of these specifications to provide prospective bidders with complete information relative to the total performance of any resulting Contract. Bidders are obligated to read and understand all parts of this Invitation for Bid and to obtain clarification of any part not thoroughly understood.

1.3 The contract resulting from this solicitation will be coordinated through the Food and Nutrition Department.

2. SCOPE OF WORK

2.1 The requirements outlined herein are intended as an aid to acquaint Bidders with what could be required to execute the work on this contract. These specifications will serve as the source documents for services for the Contract.

2.2 The Awarded Bidder shall furnish, deliver, and install the new equipment and loading dock extension at the respective location. The Awarded Bidder shall provide the equipment in accordance with industry standards or manufacturer recommendations.

2.3 The Awarded Bidder shall furnish the equipment items stated herein completely assembled, wiped down, set in place where designated, and made ready for use.

2.4 HCPS will not be responsible for or will not furnish help unloading or setting into place of said equipment. All crating and packing materials shall be removed from the site by Awarded Bidder. Existing location is on the ground level.

2.5 Replacement or repair of any cosmetic floor or wall damage as a result of installation is also required.

2.6 Receipt of equipment at delivery to facility needs to be at a pre-scheduled time.

2.7 Awarded Bidder is to make final utility connections

2.8 Perform startup and train operators.

2.9 New equipment must match the location’s current utility set-up:

2.9.1 Electrical, gas lines, plumbing/drains, and venting (if applicable)

2.9.1.1 National Electrical Code and/or other local electrical codes
2.9.1.2 Plumbing connections shall comply with applicable Sanitary, Safety and Plumbing Codes.

2.10 All work shall be approved by the HCPS Food and Nutrition Department. HCPS reserves the right of final approval for any work at the time of job completion. If the work is not acceptable, the Awarded Bidder will be called in to review and correct all problem areas without additional cost to HCPS. Any work necessary will be performed in accordance with a schedule jointly agreed upon. Failure of the Awarded Bidder to correct deficiencies, in a timely manner, may result in HCPS contracting with another vendor to correct deficiencies. The Awarded Bidder may then be responsible for the associated cost(s).

3. TECHNICAL SPECIFICATIONS

3.1 Project Manual – see attached.

3.2 Drawings – see attached.

3.2.1 T1.0 – Cover Sheet
3.2.2 AD.1 – Demolition Plans
3.2.3 A1.0 – Floor Plans
3.2.4 A2.1 – Exterior Elevations
3.2.5 A3.1 – Wall Sections
3.2.6 MD1.0 – Demolition Mechanical Plan
3.2.7 M1.0 – Mechanical Plan
3.2.8 M2.0 – Schedules, Symbols List, Abbreviations and Notes
3.2.9 ED1.0 – Demolition Electrical Plan
3.2.10 E1.0 – Electrical Plan
3.2.11 E2.0 – Power Riser, Schedule
3.2.12 E3.0 – Symbols List

3.3 Revision Notes

3.3.1 A1.0 note #3 - Needs a foundation, it is CMU, it does not need parged however it does receive an edge angle. See 1/A3.1. Foundation should be 12”x24” with (3) #5 bars.

3.3.2 Basis-of-Design Product states a “Barrier One Incorporated” product. This product is only for the basis of design, other products that produce similar results are allowable for usage without substitution request.

4. PRE-BID CONFERENCE

4.1 Contact Jeff Wilson, HCPS Food and Nutrition Food Maintenance Chief, at 410-638-4078 or by e-mail at jeffrey.wilson1@hcps.org to schedule a site visit.

4.2 Bidders are responsible for site visitation and confirmation of existing conditions.

4.3 Failure to become familiar with the site will not relieve a successful bidder of his obligation to furnish all materials, labor, and services necessary to carry out the provisions of the specifications herein.

4.4 The Awarded Bidder shall be responsible for total requirements and must submit their bid based on a completed installation ready for its intended use.

5. GENERAL INFORMATION

5.1 It may be necessary for part of the work to be done during the regular school year. Proper

identification is a necessity at all times. Safety and security for students and staff is a priority. Contractors and visitors must report to the main office, present photo identification and sign in when entering the building. School-assigned visitor badges must be worn at all times.

5.2 It will be necessary for the Contractor to coordinate with the Food Service Maintenance Chief of the HCPS Food and Nutrition Department to set up a schedule of work during the entire course of the job, so as not to interfere with the normal operation of the school.

5.3 All passageways and means of egress must be kept open during school hours except where special permission is granted.

5.4 All work is to be performed during regular business hours Monday through Friday, 8:00am – 4:00pm.

6. SPECIFIC CONDITIONS

6.1 It is the sole responsibility of the Bidder to call to the attention of Jennifer Horner at Jennifer.Horner@hcps.org, of any discrepancies in specifications, **IN WRITING**, at least **FIVE (5)** working days **PRIOR TO THE OPENING OF THE BID.** Any errors, omissions or incompatibilities noted after the bid opening shall be the Bidder's responsibility and shall in no way release them from performing all work in accordance with good practices and in accordance with the true meaning and intent of the Scope of Work and the Specifications for this project.

6.2 No bid will be considered from any person, firm or corporation who has defaulted in the performance of any contract or agreement made with Harford County Public Schools, or conclusively shown to have failed to perform, or complete on time, a contract(s) or project(s) of similar nature. HCPS will consider past performance, i.e. the quality of services of bidders who have previously contracted with HCPS for similar services.

6.3 Illustrated operational, instructional and parts manuals shall be furnished with each piece of equipment delivered under this contract and shall be provided at no further cost to Harford County Public Schools.

6.4 The Awarded Bidder shall, without additional cost to Harford County Public Schools, be responsible for obtaining all necessary licenses and permits. The Awarded Bidder shall comply with all FEDERAL, STATE, AND LOCAL LAWS, CODES AND REGULATIONS in connection with the performance of the work. Licenses and permits shall apply to the Contract throughout and shall be deemed to be included in the Contract the same as through herein written out in full.

6.5 All work is to be handled in complete compliance with OSHA and MOSHA requirements. Every effort is to be made to ensure the safety of all individuals during work, as well as, during operation.

6.6 Awarded Bidder(s) shall assume full responsibility and liability for protection of workers and persons occupying areas adjacent to the delivery and pick-up sites, except and unless damage, loss, injury or illness is caused by the negligence or tortious misconduct of HCPS employees.

6.7 Awarded Bidder(s) shall have available, copies of all applicable codes, regulations, standards, documents and this specification.

6.8 Where conflicts among the requirements of the codes, regulations, standards, documents and this specification exist, the most stringent requirement shall be utilized by the Awarded Bidder(s).

6.9 All work shall be performed in a neat, workmanlike manner in full compliance with standards acceptable to the trade. Adequate precautions shall be taken for the safety of personnel and for prevention of damage or defacing of any portion of the building or property.

6.10 When available, HCPS shall make available to the Awarded Bidder any required utilities for the

work under the Contract. Accidental interruption(s) of utilities caused by the Awarded Bidder, and repair thereto, shall be the responsibility or expense of the Awarded Bidder.

6.11 The Awarded Bidder shall be responsible for their work until its completion and final acceptance by HCPS.

6.12 Storage of any tools, equipment or materials incidental to the performance of the Contract must be coordinated with the Food Service Maintenance Chief of the HCPS Food and Nutrition Department and will be at the Contractor's risk. NO TOOLS, EQUIPMENT OR MATERIALS MAY BE STORED IN THE SCHOOL. The Contractor shall repair or replace any of the same, which may be damaged, lost or stolen without additional cost to HCPS.

6.13 All hazardous waste will be identified as defined by Federal, State, and Local laws, regulations, and guidelines currently in effect. Additionally, all hazardous waste resulting from work at this site under these specifications must be removed and properly disposed of in accordance with all applicable Federal, State, and Local laws, guidelines, and regulations.

6.14 Asbestos Containing Materials (ACM) – In the event the Awarded Bidder encounters any materials suspected of being asbestos or containing asbestos, the Awarded Bidder shall not disrupt such material but shall immediately stop work and notify the Harford County Public Schools Food Service Maintenance Chief. In the event asbestos identification or abatement is required, the same shall be performed by HCPS and not the Awarded Bidder. The AHERA Management Plan for each building is available for review, and the Awarded Bidder is required to make full use of this document. Unless otherwise specified in the Contract, asbestos removal and abatement is not the Awarded Bidder's responsibility or obligation. In the event the Awarded Bidder performs any work with respect to any materials suspected of being ACM or containing ACM after encountering same, the Awarded Bidder shall pay and indemnify HCPS with respect to any and all cost(s) of remediation or damages arising out of the Awarded Bidder's continuation of work after encountering materials which are suspected of containing ACM or being ACM. NO materials provided under this contract shall contain asbestos. HCPS shall be entitled to pursue all remedies including but not limited to immediate termination of the Contract in the event the Awarded Bidder fails to comply with any obligations set forth above.

6.15 All materials furnished in carrying out this contract shall be of the quality required by the specifications. Any unsatisfactory or damaged materials furnished shall be removed and satisfactorily replaced by the Contractor when notified in writing to do so by Harford County Public Schools. If the Contractor shall neglect or refuse to remove such unsatisfactory or damaged materials within a reasonable amount of time after the serving of the above-mentioned notice, Harford County Public Schools may remove said materials, or cause the same to be removed. And satisfactorily replaced by contract, or otherwise, as may be considered expedient, and the expense thereof shall be charged to the Contractor and such expense so charged shall be deducted from any money due or to become due under the Contract. No such rejected material shall be again offered for use on any contract with Harford County Public Schools.

6.16 The documents contained within this Invitation for Bid, constitutes the only terms and conditions agreed upon between HCPS and the Awarded Bidder. Modifications, alterations, changes or amendments must be agreed upon in writing and signed by both parties.

6.17 Any and all exceptions to the bid documents must be clearly noted at the time of bid submission and included under a separate submission labeled "Exceptions". Exceptions may deem the bid non-responsive.

6.18 Bidders providing incomplete or inaccurate information to HCPS are subject to immediate termination of the contract or rejection of their bid as non-responsive.

6.19 Bidders are solely responsible for their expenses, if any, in preparing a response to this Invitation for Bid.

7. FORM OF PROPOSAL

7.1 All pricing must be submitted on the Bid Form; all blank spaces shall be filled in and properly signed.

7.2 Bidders shall state on the Bid Form the manufacturer name, model number, and lead time of the item being offered.

7.3 All costs of removing and disposing of old equipment, furnishing, delivering, and installing of the new equipment shall be incorporated into the bid price.

7.4 All bids shall be made in accordance with the Bid Form. All bids which stipulate a condition or combination other than specified may be rejected. No bidder will be allowed to offer more than one item for each item specified, even though they may feel that they have more types that meet specifications. Bidders must determine for themselves which to offer. If said bidder should submit more than one item for any item specified, those items may be rejected.

7.5 Due to possible changes and/or additions to the solicitation package, HCPS requests that bidders delay submission of their bid package until after the date that questions are due, to allow time for the possible issuance of an addendum. All changes will be processed through appropriate addenda.

8. AWARD

8.1 Harford County Public Schools intends to award to the lowest responsive and responsible bidder(s) meeting the specifications. The intent is to award the Contract in its entirety to one (1) bidder for all services requested.

8.2 HCPS may reject any bid which contains omissions, altered forms, additions, or imposes conditions or offers alternate items. HCPS may make any award which is deemed in the best interest of Harford County Public Schools or make no award at all, at its sole discretion.

8.3 Harford County Public Schools reserves the right to accept or reject any or all bids and to waive any informalities in bids received whenever such rejection or waiver is in the best interest of HCPS.

8.4 Conditional or unbalanced bids will not be accepted and may be deemed non-responsive.

8.5 HCPS reserves the right to reject any bid if the evidence submitted by a bidder, or from the investigation of such bidder, fails to satisfy HCPS that such bidder is qualified to fulfil the obligations of the contract.

8.6 HCPS does not guarantee that all or any work will be done and reserves the right to reject all bids and to re-bid at its sole discretion.

8.7 Submission of a bid, in response to this request, shall mean that the Bidder can complete all work “as specified” within the specified time frame.

8.8 HCPS reserves the right to add awarded bidder(s) to this contract, within one (1) year of contract award, if the initial awarded bidder(s) cannot fulfill all the requirements.

8.9 HCPS reserves the right to utilize the services of the next favorably priced responsive and responsible bidder, if for any reason the preceding Awarded Bidder is unable to fulfill their contractual obligations within one (1) year of contract award.

8.10 In the event the Awarded Bidder(s) cannot deliver the services of the Contract in accordance with the specifications, HCPS reserves the right to purchase the services on the open market to assure the continued operation of HCPS. The difference in the open market cost and bid price will be at

the expense of the Awarded Bidder.

9. PROJECT TIMELINE

Installation of equipment, in full working condition, is preferred to occur no later than **March 31, 2025** (dependent on availability of the product).

10. DISCOUNTS

It shall be the responsibility of the Awarded Bidder to provide notification of any promotional allowances, volume incentives, and/or rebates. The Awarded Bidder(s) shall also provide any necessary forms and documentation needed to redeem such discounts.

11. BILLING AND PAYMENT

11.1 Harford County Public Schools will issue a Purchase Order for work to be completed listed on the Bid Form.

11.2 Invoice must reflect the amount provided on the Bid Form.

11.3 Invoices must be submitted to the Accounts Payable Department via email to APInvoice@hcps.org, referencing the Contract and/or Purchase Order number.

11.4 Invoice must reflect amount provided on the Purchase Order.

11.5 Awarded Bidder must accept payment by PCard, conventional check, or other electronic means at HCPS' option.

11.6 Standard HCPS payment terms are net thirty (30) days, after receipt of an approved invoice.

12. GUARANTEE/WARRANTY

12.1 From the date of acceptance of the items delivered, the Contractor shall unconditionally guarantee the materials of all equipment furnished by them, for a minimum period of one (1) year or throughout the manufacturer's warranty period, whichever is longer.

12.2 If within the guarantee period, any defects or signs of deterioration are noted, which, in the opinion of Harford County Public Schools are due to faulty design, upon notification, the Contractor, at his expense, shall repair and/or adjust the equipment or parts to correct the conditions, or he shall replace the part or entire unit to the complete satisfaction of HCPS. These repairs, replacements, or adjustments shall be made only at such times as designated by the authorized representative of HCPS and least detrimental to the school's program.

12.3 All warranties, expressed or implied, shall survive delivery, inspection, acceptance, and payment.

13. TAXES AND PERMITS

13.1 Sales to the State of Maryland or any of its political subdivisions are exempt from retail sales tax. However, contractors or builders purchasing tangible personal property in the performance of their contract for the construction, repair or alteration of real property for the State of Maryland or any of its political subdivisions are not tax exempt.

13.2 Awarded Bidder(s) shall obtain and pay for any permits required and provide a copy to HCPS as well as post a copy on site.

14. DELIVERY

14.1 Delivery shall be made during the hours of 8:00am – 4:00 pm, Monday through Friday, except for school holidays.

14.2 Deliveries shall be made outside of the school building and the equipment shall be placed so as not to block entrances, exits and in an appropriate area as designated by school personnel. Manpower shall be provided by awarded bidder or their truckers to unload equipment delivered under this contract. HCPS will not provide labor for these purposes.

14.3 Delivery of all equipment specified herein shall be coordinated with the HCPS Food Service Maintenance Chief. However, if bidders are unable to meet these requirements, they shall indicate, in an accompanying letter, the delivery schedule upon which their proposal is based.

14.4 All equipment deliveries to the sites will require not less than two (2) weeks' advance notice prior to the first shipment of equipment and at least twenty-four (24) hours' notice of subsequent deliveries.

14.5 In no event shall equipment deliveries be made without prior notification and approval. If the Awarded Bidder fails to provide such advance notice it shall be considered sufficient reason for non-acceptance of the delivery until satisfactory arrangements can be made for proper handling and storage.

14.6 Deliveries of equipment and other materials must be made with the Awarded Bidder present and stored on site as indicated by the HCPS Food and Nutrition Department. Equipment and material shall not be delivered to the site prior to their installation, unless approved by HCPS' Food Service Maintenance Chief.

15. PROTECTION OF WORK AND PROPERTY

15.1 The Awarded Bidder will be held responsible for any and all damage to Harford County Public Schools property done or caused by the Awarded Bidder or other personnel engaged in the execution of this contract. They shall be similarly responsible for all injury to any person that occurs as a result of their actions or negligence. They shall take proper safety and health precautions to protect the work, the workers, the public and the property of others. The Awarded Bidder shall also be responsible for any and all damage to adjacent property incurred in the performance of the Contract and hold Harford County Public Schools free from any and all claims for damages arising from the execution of the work.

15.2 HCPS will occupy the site and existing building during the entire work period. The Awarded Bidder shall cooperate with HCPS during the work to minimize conflicts and facilitate HCPS usage. To the satisfaction of the school, the Awarded Bidder is to move and/or protect all school equipment, furnishings and occupied areas from work-related debris and noise. The Awarded Bidder shall perform the work so as not to interfere with HCPS operations. The Awarded Contractor is aware that this work shall be performed on school grounds, where students, staff and parents will be present and is responsible for maintaining a safe clean worksite.

15.3 Limit use of premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

15.4 Keep driveways and entrances serving the premises clear and available to HCPS, HCPS's employees and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

15.5 The Awarded Bidder shall at all times keep the premises free from accumulation of waste materials or rubbish caused by its employees or work, and at the completion of the Work, all trash will be removed from and about the work site and all tools, scaffolding and surplus materials shall leave the area clean and neat unless more exactly specified. In case of disputes, HCPS may remove trash, rubbish, etc. and charge the cost to the Contractor.

15.6 The Awarded Bidder shall protect all HCPS property, materials, equipment, improvements, utilities, structures, and vegetation at all times during the course of this contract. Any property or incidentals damaged during the course of this contract shall be repaired or replaced by Awarded Contractor to the satisfaction of HCPS.

15.7 Deliveries of equipment and other materials must be done with the Awarded Bidder present and stored on site as indicated by the Facilities Department.

16. PROFESSIONALISM

16.1 HCPS requires all work to be completed utilizing "Professional Workmanship". HCPS shall monitor and examine the services provided and shall only accept "Professional Workmanship". The following shall be considered some reasons for immediate termination of a company.

16.1.1 Failure of the Awarded Bidder to have the required materials and equipment with them to execute a project without undue delay to leave the project and pick-up supplies or equipment. HCPS reserves the right to bring in any other contractor in order to complete work that is not complete in a timely fashion.

16.1.2 Failure of the Awarded Bidder to utilize qualified personnel to do the work for HCPS. The individuals doing the work at HCPS shall:

16.1.2.1 be properly trained and experienced to perform services as specified.

16.1.2.2 refrain from any comments or gestures to the students and/or staff; and refrain from making any comments and/or gestures to fellow workers that could be interpreted as inappropriate and/or obscene.

16.1.2.3 be dressed appropriately to work in a "school environment" with student, teacher, staff, and parents present. The employee shall prominently display the name of their company on a shirt or hat.

16.1.2.4 abide by the HCPS no smoking policy. HCPS maintains a Tobacco-Free environment. Furthermore, HCPS policy prohibits gambling, alcohol, drugs and obscene or abusive language.

16.2 Immediate termination of a company for not providing "Professional Workmanship" as determined by HCPS, using criteria determined by HCPS and not necessarily industry standards, shall result in:

16.2.1 Awarded Bidder being paid for all work completed to date. Any monies required to complete the repairs or installations in progress shall be deducted from those owed, prior to final payment. In the event the monies due exceed the amount HCPS owes that Awarded Bidder, the monies required to complete services in progress shall be owed HCPS by that Awarded Bidder.

17. SUBSTITUTIONS

17.1 Brand names used are intended to be descriptive and not restrictive. Bids may be considered on models, brands, or products of manufacturers other than those specified.

17.2 Bidders offering any item other than the type as indicated in this bid must so state in each instance, giving the item specification they intend to furnish, including catalog cuts, catalogs or literature, where applicable, otherwise, their bid will be considered as being based upon furnishing the specific type of material named in this bid. Failure to provide this information my deem the proposal non-responsive.

17.3 Bidders seeking alternate manufacturer approval as equal on this project will have the burden of proving, to the satisfaction of HCPS, that the alternate is an approved equal. HCPS reserves the right to determine when an equivalent shall be accepted, and when accepted, whether or not the substitute represents a true equal against the described bona-fide requirements.

18. SUBCONTRACTORS

18.1 All subcontractors, prior to their use by the Awarded Bidder in any HCPS facility, must be approved by HCPS. **Awarded Bidder shall submit with their bid a list of subcontractors that they will employ and utilize for HCPS work**. The responsibility for updating this list is the Awarded Bidder and utilization of a HCPS non-approved subcontractor is grounds for suspension or termination. This is in addition to any special provisions, which may apply as a result of MBE/WBE requirements, which may become part of this solicitation.

18.2 The Awarded Bidder shall give their constant personal attention to the faithful execution of this contract, shall keep the same under their own control, and shall not assign by power of attorney or otherwise, the work or any part thereof. The Awarded Bidder shall provide the name of the Subcontractor(s) they intend employing, the portion of the materials/labor to be furnished, their place of business, and such other information as requested by the Bid Specifications and/or HCPS. The information may be used in considering the potential performance capabilities of the Subcontractor(s).

19. QUALIFICATION OF BIDDER

19.1 Bidders shall be authorized or certified by the manufacturer to sell and service the equipment. Bidders shall have direct access to parts, accessories, and technical support back-up for the equipment. **Documentation supporting manufacturer's authorization to sell and provide warranty service for said equipment is required. Failure to provide this documentation may deem your bid non-responsive.**

19.2 All bidders must be considered in "Good Standing" (all fees, taxes, and penalties owed to Maryland are paid). Visit the following website to ensure compliance: https://egov.maryland.gov/BusinessExpress/EntitySearch (HCPS bears no responsibility for accuracy, legality or content of the external site or for that of subsequent links. Contact the external site for answers to questions regarding its content). Any bidder not considered in "Good Standing" may be deemed non-responsible.

19.3 All bidders must not have any "Exclusions" (bidder cannot be debarred or suspended). If the indicator box is "green" and states "Entity" this vendor is not suspended or debarred. If a bidder's name does not appear after searching, the bidder does not have an "Exclusion". Visit the following website to ensure compliance: https://sam.gov/SAM/pages/public/index.jsf (HCPS bears no responsibility for accuracy, legality or content of the external site or for that of subsequent links. Contact the external site for answers to questions regarding its content). If the indicator box is "purple" and states "Exclusion" the bidder may be deemed non-responsible.

19.4 Bidders shall furnish to HCPS any requested information and data/documentation. HCPS reserves the right to reject any bid if the information or documentation submitted by the bidder or investigation of such bidder fails to satisfy HCPS that such bidder is properly qualified to carry out the obligations of the Contract and to complete all requirements contemplated therein.

19.5 Bidders shall complete and return with their bid the "Reference Form" included in this solicitation (see Bid Form – Reference Form). Bidders shall have a minimum of three (3) references completed from clients of similar size and needs, within the past three (3) years. Business Name, contact name, type of work performed, e-mail addresses and phone numbers are required. Failure to submit relevant references may deem bidder as non-responsible.

19.5.1 The references listed will be checked by HCPS. All references must include a contact person who can comment on your organization's ability to provide this service and their impression of how well your organization fulfilled its obligations under the contract. It is imperative that contact names and information be accurate. HCPS reserves the right to request additional references.

19.4.2 HCPS will not be responsible for errors, non-working phone numbers, inaccurate email addresses or people no longer employed with the firm or do not respond.

20. CONTRACTOR RESPONSIBILITY

20.1 The plans and specifications are intended to cover a complete project. It shall be distinctly understood that failure to mention any work which normally would be required to complete the project shall not relieve the Awarded Bidder of their responsibility to perform such work without extra payment.

20.2 The Awarded Bidder shall perform site visits to verify scope of the work with the Owner before ordering any materials or doing any work. No extra charge or compensation will be considered for any construction performed prior to this verification.

20.3 Note that the Awarded Bidder is responsible for all measurements. Errors and omissions will be the Awarded Bidder's responsibility.

20.4 The Owner has the right to inspect the site and perform testing of work and construction materials. The Awarded Bidder shall assist the Owner in performing such inspections.

20.5 Submit shop drawings and submittals as per the Technical Specifications.

21. PROCUREMENT ADMINISTRATOR

Jennifer Horner, CPPB, Procurement Agent, will administer the solicitation process. The Procurement Administrator will be the sole point of contact for the purposes of this bid. Questions and inquiries should be e-mailed to the Procurement Administrator: Jennifer Horner, at Jennifer.Horner@hcps.org.

All questions must be e-mailed and received no later than 2:30 pm local time **November 14, 2024.** Questions will not be accepted by phone.

Questions that are deemed to be substantive in nature will be answered in writing, with both the question(s) and answer(s) being addressed in the form of an Addendum and posted on our website on or before **November 18, 2024** at www.hcps.org as well as eMaryland Marketplace Advantage.

HARFORD COUNTY PUBLIC SCHOOLS
102 South Hickory Avenue
Bel Air, MD 21014

CONTRACT SAMPLE

BID #25-JHP-015

Outdoor Freezer and Loading Dock Extension at
Church Creek Elementary School (Re-Advertisement)

THIS AGREEMENT, made this _____ day of _____, 2024, by and between the Board of Education of Harford County, acting herein through its Superintendent, hereafter called "Owner" and _____, a corporation located at _____, hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR, hereby agrees with the OWNER to commence and to furnish and deliver in accordance with the accompanying specifications, for the prices listed on the Bid Form.

Installation of equipment, in full working condition, is preferred to occur no later than **March 31, 2025** (dependent on availability of the product)**.**

Hereinafter called the contract, in the amount of _____ provided, and all related work in connection therewith, under the terms as stated in the General and Special Conditions of the Bid Document and all related documents; and at their own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in **Bid #25-JHP-015**, and printed or written explanatory matter thereof, the specifications and contract documents therefore as prepared by the Board of Education of Harford County, and as enumerated in the General Conditions, all of which are made a part hereof and collectively evidence and constitute the Contract.

I/WE certify that this bid is made without any previous understanding, agreement, or connection with any other person, firm, or corporation making a bid for the same supplies, and, in all respects, is fair and without collusion or fraud.

In compliance with the above and subject to all terms and conditions thereof, the undersigned offers and agrees, if the bid be awarded, to furnish items at the prices indicated within the time specified.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in two (2) counterparts, each of which shall be deemed an original.

Seal in Signature

_____
Board of Education of Harford County
Witness

_____
Date

Board of Education of Harford County

_____
Sean W. Bulson, Ed.D., Superintendent of Schools

_____
Board of Education of Harford County – Board President
(if over $100k)

Seal in Signature

_____
Authorized Contractor Signature

_____
Contractor Witness

_____
Company Name

_____
Street Address

_____
City, State, Zip

_____
Company Name

HARFORD COUNTY PUBLIC SCHOOLS
102 SOUTH HICKORY AVENUE
BEL AIR, MD 21014

CHECK LIST

BID #25-JHP-015

Outdoor Freezer and Loading Dock Extension at
Church Creek Elementary School (Re-Advertisement)

- ☐ Signed and included all Addenda (if applicable)
- ☐ Reviewed Insurance Requirements and will comply with the coverage limits listed **(include sample)**
- ☐ Submitted documentation stating bidder is authorized or certified to sell and service manufacturer equipment (Section 19.1)
- ☐ Included submittals and/or product descriptive material (if offering an alternate product)
- ☐ Completed and Submitted Bid Form
- ☐ Completed and Submitted Reference Form
- ☐ Signed and included State of Maryland Anti-Bribery
- ☐ Signed and included Debarment, Suspension, Ineligibility, and Voluntary Exclusion
- ☐ Signed and included Employment of Sex Offenders and Other Criminal Offenders Affidavit

Items that are in bold and indicated with an (*) above must be submitted in proper form and content at the time of bid opening or the bid may be deemed non-responsive.

Acknowledgement of Addenda (if applicable)
I/We acknowledge receipt of the following Addenda:

No. _____, Dated _____

No. _____, Dated _____

No. _____, Dated _____

No. _____, Dated _____

_____
Company Name

HARFORD COUNTY PUBLIC SCHOOLS
102 SOUTH HICKORY AVENUE
BEL AIR, MD 21014

BID FORM

BID #25-JHP-015

Outdoor Freezer and Loading Dock Extension at
Church Creek Elementary School (Re-Advertisement)

In compliance with the Invitation for Bid, and subject to all terms and conditions thereof, the undersigned offers and agrees to furnish all necessary permits, labor, equipment, materials, supervision, tools, insurance, services, and all related incidentals required to furnish, deliver, and install a new walk-in outdoor freezer at Church Creek Elementary School, in full compliance with the accompanying specifications in accordance with the price listed below.

Description	Amount
Furnish, Deliver, and Install a New Walk-In Outdoor Freezer at Church Creek Elementary School	**$**
• Manufacturer Name	
• Model Number	
• Delivery Lead Time	

ADDITIONAL INFORMATION:

Contract Contact/Sales Rep Name:	
Phone Number:	
E-Mail Address:	

FORM OF PAYMENT (mark those you will accept)*:

	Do you accept credit card?	
Is there a fee for using a credit card?		
If yes, what is the fee amount?		
	ACH Payment	
	Conventional Check	

***NOTE**: Must request changes to payment method or bank information in writing.

_____
Company Name

ANY EXCEPTIONS TO THE SPECIFICATIONS MUST BE CLEARLY INDICATED.

ANY ALTERATIONS ON THE PROPOSED COST DATA ON THE BID FORM MUST BE INITIALED IN SCRIPT, IN INK, BY THE PERSON SIGNING THE BID.

_____ COMPANY	_____ NAME (TYPE OR PRINT)
_____ ADDRESS	_____ TITLE
_____ CITY, STATE and ZIP	_____ AUTHORIZED REPRESENTATIVE SIGNATURE
_____ TELEPHONE	_____ DATE
_____ FEDERAL TAX ID NUMBER	_____ E-MAIL ADDRESS

_____
Company Name

HARFORD COUNTY PUBLIC SCHOOLS
102 SOUTH HICKORY AVENUE
BEL AIR, MD 21014

REFERENCE FORM

BID #25-JHP-015

Outdoor Freezer and Loading Dock Extension at
Church Creek Elementary School (Re-Advertisement)

List at least three (3) projects/contracts of similar size and scope within the past three (3) years. Attach additional pages if necessary.

	Reference 1	Reference 2	Reference 3
Name of Organization			
Address			
Description of Project or Services Provided			
Dollar Amount			
Contact Person			
Phone Number			
Email Address			

HARFORD COUNTY PUBLIC SCHOOLS

Sean W. Bulson, Ed.D., Superintendent 102 S. Hickory Ave, Bel Air, Maryland 21014

STATE OF MARYLAND ANTI-BRIBERY AFFIDAVIT

I HEREBY CERTIFY that:

1. I am the _____ and the duly authorized representative of the firm of _____ whose address is _____ and that I possess the legal authority to make this affidavit on behalf of myself and the firm for which I am acting.

2. Except as described in paragraph 3 below, neither I, nor to the best of my knowledge, the above firm, nor any of its officers, directors or partners, or any of its employees directly involved in obtaining contracts with the State or any county, bi-county, or multi-county agency, or subdivision of the State have been convicted of, or have pleaded nolo contendre to a charge of, or have during the course of an official investigation or other proceeding admitted in writing or under oath acts or omissions committed, which constitute bribery, attempted bribery, or conspiracy to bribe under the provisions of Section 9-201 in the Criminal Law Article of the Annotated Code of Maryland or under the laws of any state or federal government.

3. (State *"none"* or, as appropriate, list any conviction, plea, or admission described in paragraph 2 above, with the date; court, official, or administrative body; and the sentence or disposition, if any.

_____

I acknowledge that this affidavit is to be furnished to the requesting agency, and where appropriate, to the Board of Public Works and the Attorney General under §16-202, S.F. of the Annotated Code of Maryland. I acknowledge that, if the representations set forth in this affidavit are not true and correct, Harford County Public Schools may terminate any contract awarded and take any other appropriate action. I further acknowledge that I am executing this affidavit in compliance with §16-203, S.F. of the Annotated Code of Maryland, which provides that certain persons who have been convicted of or have admitted to bribery, attempted bribery, or conspiracy to bribe may be disqualified, either by operation of law or after a hearing, from entering into contracts with the State or any of its agencies or subdivisions.

I do solemnly declare and affirm under the penalties of perjury that the contents of this affidavit are true and correct.

_____ _____

Signature Witness

_____

Date

HARFORD COUNTY PUBLIC SCHOOLS

Sean W. Bulson, Ed.D., Superintendent 102 S. Hickory Ave, Bel Air, Maryland 21014

CERTIFICATION REGARDING U.S. GOVERNMENT DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR, part 85, Section 85.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1988, Federal Register (pages 19160-19211).

(1) The prospective participant certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

_____

Name and Title of Authorized Agency/Organization Representative

_____ _____

Signature Date

_____

Agency/Organization

*Above certification instituted by the U. S. Department of Education for all grantees and subgrantees as of fiscal year 1990.

HARFORD COUNTY PUBLIC SCHOOLS

EMPLOYMENT OF SEX OFFENDERS AND OTHER CRIMINAL OFFENDERS AFFIDAVIT

I AFFIRM THAT:

I am aware of, and the business listed below will comply with, the following requirements of Section §11-722 of the Criminal Procedure Article, and Section §6-113 of the Education Article, Annotated Code of Maryland:

A. Maryland Law requires sex offenders to register with the State and with the local law enforcement agency in the county in which they will reside, work, or attend school. An HCPS contractor agrees and acknowledges that it/he/she is prohibited from knowingly employing an individual to work at a school if the individual is registered as a sex offender pursuant to Section §11-704 of the Criminal Procedures Article of Maryland Code.

B. An HCPS contractor or subcontractor may not knowingly assign an employee to work on school premises with direct, unsupervised, and uncontrolled access to children, if the employee has been convicted of:

1) Section §3-307 of the Criminal Law Article, Maryland Annotated Code, *Sexual Offense in the Third Degree*;
2) Section §3-308 of the Criminal Law Article, Maryland Annotated Code, *Sexual Offense in the Fourth Degree*;
3) An offense under the laws of another state that would constitute a violation of Sections §3-307 or §3-308 of the Criminal Law Article if committed in Maryland;
4) Child sexual abuse under Section §3-602 of the Criminal Law Article, Annotated Code of Maryland;
5) An offense under the laws of another state that would constitute child sexual abuse under Section §3-602 of the Criminal Law Article if committed in Maryland;
6) A crime of violence as defined in Section §14-101 of the Criminal Law Article, Annotated Code of Maryland; or
7) An offense under the laws of another state that would constitute a crime of violence under Section §14-101 of the Criminal Law Article if committed in Maryland.
8) Contractors shall comply with the requirements of House Bill 486 passed by the General Assembly in 2019, regarding screening of applicants for employment.

    a. Effective July 1, 2019
    b. MSDE Guidance for House Bill 486 – Child Sexual and Sexual Misconduct Prevention) can be found online at www.marylandpublicschools.org.
    c. Submission of Section 000325 Contract Affidavit (HB 486/SB 541Compliance) is required to be submitted prior to award of contract.

See Section §6-113 of the Education Article, Annotated Code of Maryland

Violations of any of these provisions may result in Termination for Cause.

I AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: _____

By: _____ (printed name of Authorized Representative and affiant)

_____ (signature of Authorized Representative and affiant)

_____ (Company Name)

New Exterior Walk-in Freezer at Church Creek Elementary School

FOR

HARFORD COUNTY PUBLIC SCHOOLS

Project Manual

July 10th, 2024

Bid Documents

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SECTION 011000 - 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. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Multiple Work Packages.
4. Coordination with occupants.
5. Work restrictions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

A. Project Identification: 2241053.00.

1. Project Location: 4299 Church Creek Rd, Bel Camp, Maryland, 21017, United States.

B. Owner: HCPS, Maryland, United States.

1. Owner's Representative: Jeffrey Wilson, Food Service Maintenance Chief.

C. Architect: Frederick Ward Associates, 5 S Main St, Bel Air, Maryland, 21014.

1. Architect's Representative: William Starr.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. The project scope includes a concrete addition to the existing loading dock to support an approximately 11’ x 12’ walk-in freezer. The freezer itself is specified to maintain -10 degrees Fahrenheit, with mechanical controls preferred over proprietary systems and shall be tied into the existing building automation system utilizing Metasys for temperature monitoring and alerts, is mandatory. A minimum floor rating of 200 lbs. is required for hand cart operations.
2. and other Work indicated in the Contract Documents.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy Project site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day 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 approval of authorities having jurisdiction.
2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work between school start a.m. to school dismissal p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Weekend Hours: As scheduled in advance with HCPS .
2. Early Morning Hours: As scheduled in advance with HCPS .
3. Hours for Utility Shutdowns: As scheduled in advance with HCPS .
4. Hours for Core Drilling and trenching: As scheduled in advance with HCPS.

C. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products , alcoholic beverages, and other controlled substances on Project site is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

G. Employee Screening: Comply with Owner's requirements for and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
2. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

C. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1:

1. Cutting of new or existing concrete slabs-on-grade up to [6 inches] thick, removal and excavation as required, and subsequent backfill, compaction, and patching of concrete in accordance with Section 017300 "Execution." not otherwise indicated in the Contract Documents
2. Units of Measurement: Square feet of concrete removed.

B. Unit Price No. 2: Add additional 120v duplex outlet on new circuit.

1. Description: Add additional 120v duplex outlet on new circuit.
2. Unit of Measurement: Per individual outlet

C. Unit Price No. 3: Add additional network outlet.

1. Description: Add additional cat6 network outlet with clear run to MDF switch.
2. Unit of Measurement: Per individual outlet

END OF SECTION 012200

SECTION 012600 - 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. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

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 form included in Project Manual .

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. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, 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.
e. Quotation Form: Use forms acceptable to Architect .

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim 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 Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect .

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on form included in Project Manual .

1.7 CONSTRUCTION CHANGE DIRECTIVE

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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - 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. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
2. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
3. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
4. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

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. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.

4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 011000 "Summary."

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor may be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.

D. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:
    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

E. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien 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 conditional 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 conditional 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 executed waivers of lien on forms acceptable to Owner.

G. 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. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.

H. Application for Payment at Substantial Completion: After Architect issues 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.
   a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: After completing Project closeout requirements, 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. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706.
6. AIA Document G706A.
7. AIA Document G707.
8. Evidence that claims have been settled.
9. 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.
10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - 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. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. RFIs.
3. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. 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, telephone number, and email address 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.

B. Key Personnel Names: Within 15 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, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction 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 to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall cooperate with Project coordinator, who 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 own 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 performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities 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.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
   a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
   b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
   c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
   e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
   f. Indicate required installation sequences.
   g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
   a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
   c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
   d. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Fire-Protection System: Show the following:
   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.

1.7 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Architect.
5. Architect's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Architect's Data Files Not Available: Architect will not provide Architect's CAD drawing digital data files for Contractor's use during construction.

B. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.

2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. The following digital data files will be furnished for each appropriate discipline:
   a. Floor plans.
   b. Reflected ceiling plans.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 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 a minimum of seven days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. 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. Responsibilities and personnel assignments.
   b. Tentative construction schedule.
   c. Phasing.
   d. Critical work sequencing and long lead items.
   e. Designation of key personnel and their duties.
   f. Lines of communications.
   g. Use of web-based Project software.
   h. Procedures for processing field decisions and Change Orders.
   i. Procedures for RFIs.
   j. Procedures for testing and inspecting.
   k. Procedures for processing Applications for Payment.

l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Sustainable design requirements.
o. Preparation of Record Documents.
p. Use of the premises and existing building.
q. Work restrictions.
r. Working hours.
s. Owner's occupancy requirements.
t. Responsibility for temporary facilities and controls.
u. Procedures for moisture and mold control.
v. Procedures for disruptions and shutdowns.
w. Construction waste management and recycling.
x. Parking availability.
y. Office, work, and storage areas.
z. Equipment deliveries and priorities.
aa. First aid.
bb. Security.
cc. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
   a. Preparation of Record Documents.
   b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
   c. Procedures for completing and archiving web-based Project software site data files.
   d. Submittal of written warranties.
   e. Requirements for completing sustainable design documentation.
   f. Requirements for preparing operations and maintenance data.
   g. Requirements for delivery of material samples, attic stock, and spare parts.
   h. Requirements for demonstration and training.
   i. Preparation of Contractor's punch list.
   j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
   k. Submittal procedures.
   l. Coordination of separate contracts.
   m. Owner's partial occupancy requirements.
   n. Installation of Owner's furniture, fixtures, and equipment.

o. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

D. Progress Meetings: Conduct progress meetings at monthly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner 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 meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. 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.
      1) Review schedule for next period.
   b. Review present and future needs of each entity present, including the following:
      1) Interface requirements.
      2) Sequence of operations.
      3) Resolution of BIM component conflicts.
      4) Status of submittals.
      5) Status of sustainable design documentation.
      6) Deliveries.
      7) Off-site fabrication.
      8) Access.
      9) Site use.
      10) Temporary facilities and controls.
      11) Progress cleaning.
      12) Quality and work standards.
      13) Status of correction of deficient items.
      14) Field observations.
      15) Status of RFIs.
      16) Status of Proposal Requests.
      17) Pending changes.
      18) Status of Change Orders.
      19) Pending claims and disputes.
      20) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
   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.

E. Coordination Meetings: Conduct Project coordination meetings at monthly 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 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 meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. 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) Resolution of BIM component conflicts.
        4) Status of submittals.
        5) Deliveries.
        6) Off-site fabrication.
        7) Access.
        8) Site use.
        9) Temporary facilities and controls.
        10) Work hours.
        11) Hazards and risks.
        12) Progress cleaning.
        13) Quality and work standards.
        14) Status of RFIs.
        15) Proposal Requests.
        16) Change Orders.
        17) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL 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. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
4. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
5. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
6. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
7. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled dates for purchasing.
    h. Scheduled date of fabrication.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of firm or entity that prepared submittal.
5. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
6. Other necessary identification.
7. Remarks.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on

previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
   a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

B. 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. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
   a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow 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 15 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. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

D. Resubmittals: Make resubmittals in same form and number of copies 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 approval notation from Architect's action stamp.

E. 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.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. 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 published data are unsuitable 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 catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
4. For equipment, include the following in addition to the above, as applicable:
   a. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. 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 unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.

e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches , but no larger than 30 by 42 inches .

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.
   f. Specification paragraph number and generic name of each item.
3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Paper Transmittal: Include paper transmittal, including complete submittal information indicated.
6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control 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.
7. 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.
   a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

D. Product Schedule: 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 indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

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

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a 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. Provide a notarized signature where indicated.
2. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
3. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.

H. Test and Research Reports:

1. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

1.8 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: 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 approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp . Include 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.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required , and return.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action .
2. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 013516 - ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes special procedures for alteration work.

1.2 DEFINITIONS

A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.

B. Consolidate: To strengthen loose or deteriorated materials in place.

C. Design Reference Sample: A sample that represents the Architect's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.

D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.

F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

K. Retain: To keep an element or detail secure and intact.

L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.3 COORDINATION

A. Alteration Work Subschedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.

1. Schedule construction operations in sequence required to obtain best Work results.
2. Coordinate sequence of alteration work activities to accommodate the following:
   a. Owner's continuing occupancy of portions of existing building.
   b. Owner's partial occupancy of completed Work.
   c. Other known work in progress.
   d. Tests and inspections.
3. Detail sequence of alteration work, with start and end dates.
4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
5. Use of elevator and stairs.
6. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support the imposed loadings without damage.

B. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project building(s) and site. Some work is near circulation patterns and adjacent to restricted areas . Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

1.4 PROJECT MEETINGS FOR ALTERATION WORK

A. Preliminary Conference for Alteration Work: Before starting alteration work, conduct conference at Project site .

1. Attendees: In addition to representatives of Owner, Architect, and Contractor, testing service representative, specialists, and chemical-cleaner manufacturer(s) shall be represented at the meeting.
2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:
   a. Alteration Work Subschedule: Discuss and finalize; verify availability of materials, specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Fire-prevention plan.
   c. Governing regulations.
   d. Areas where existing construction is to remain and the required protection.
   e. Hauling routes.
   f. Sequence of alteration work operations.
   g. Storage, protection, and accounting for salvaged and specially fabricated items.
   h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
   i. Qualifications of personnel assigned to alteration work and assigned duties.

j. Requirements for extent and quality of work, tolerances, and required clearances.
k. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.

3. Reporting: Record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at weekly intervals. 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, Architect, and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to alteration work.
2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
   a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
   b. Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
   c. Review present and future needs of each entity present, including review items listed in the "Preliminary Conference for Alteration Work" Paragraph in this article and the following:
      1) Interface requirements of alteration work with other Project Work.
      2) Status of submittals for alteration work.
      3) Access to alteration work locations.
      4) Effectiveness of fire-prevention plan.
      5) Quality and work standards of alteration work.
      6) Change Orders for alteration work.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.5 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner's property.

1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, then promptly deliver it to Owner where directed at Project site .

1.6 INFORMATIONAL SUBMITTALS

A. Alteration Work Subschedule:

1. Submit alteration work subschedule within seven days of date established for commencement of alteration work .

B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor's alteration work operations.

C. Alteration Work Program: Submit 30 days before work begins.

D. Fire-Prevention Plan: Submit 30 days before work begins.

1.7 QUALITY ASSURANCE

A. Specialist Qualifications: An experienced firm regularly engaged in specialty work similar in nature, materials, design, and extent to alteration work as specified in each Section and that has completed a minimum of five recent projects with a record of successful in-service performance that demonstrates the firm's qualifications to perform this work.

1. Field Supervisor Qualifications: Full-time supervisors experienced in specialty work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on-site when specialty work begins and during its progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.
   a. Construct new mockups of required work whenever a supervisor is replaced.

B. Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a "Lead-Safe Certified Firm" according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.

C. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.

1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.

D. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with Owner's fire-protection equipment and

requirements. Include fire-watch personnel's training, duties, and authority to enforce fire safety.

E. Safety and Health Standard: Comply with ANSI/ASSP A10.6.

1.8 STORAGE AND HANDLING OF SALVAGED MATERIALS

A. Salvaged Materials:

1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site .
5. Protect items from damage during transport and storage.

B. Salvaged Materials for Reinstallation:

1. Repair and clean items for reuse as indicated.
2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.

C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.

D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.

1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.
3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F or more above the dew point.

E. Storage Space:

1. Owner will arrange for limited on-site location(s) for free storage of salvaged material. This storage space does not include security and climate control for stored material.
2. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

1.9 FIELD CONDITIONS

A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs .

1. Comply with requirements specified in Section 013233 "Photographic Documentation."

B. Discrepancies: Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

C. Size Limitations in Existing Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within existing spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.

1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
3. Erect temporary barriers to form and maintain fire-egress routes.
4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during alteration work.
5. Contain dust and debris generated by alteration work, and prevent it from reaching the public or adjacent surfaces.
6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
8. Provide supplemental sound-control treatment to isolate demolition work from other areas of the building.

B. Temporary Protection of Materials to Remain:

1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.

C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

D. Utility and Communications Services:

1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.

E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.

1. Prevent solids such as adhesive or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

F. Existing Roofing: Prior to the start of work in an area, install roofing protection as indicated on Drawings.

3.2 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following:

1. Comply with NFPA 241 requirements unless otherwise indicated.
2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
   a. If combustible material cannot be removed, provide fire blankets to cover such materials.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:

1. Obtain Owner's approval for operations involving use of open-flame or welding or other high-heat equipment. Use of open-flame equipment is not permitted. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.

3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:
    a. Train each fire watch in the proper operation of fire-control equipment and alarms.
    b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
    c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
    d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of work in each area to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
    e. Maintain fire-watch personnel at each area of Project site until two hours after conclusion of daily work.

C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.

D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.

1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.

B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.

C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.

D. Neutralize alkaline and acid wastes and legally dispose of off Owner's property.

E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.4 GENERAL ALTERATION WORK

A. Have specialty work performed only by qualified specialists.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation photographs . Comply with requirements in Section 013233 "Photographic Documentation."

D. Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.

E. Notify Architect of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.

1. Do not proceed with the work in question until directed by Architect.

END OF SECTION 013516

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

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

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

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

C. Related Requirements:

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

1.2 DEFINITIONS

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

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

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

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

D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:
   a. Verify selections made under Sample submittals.
   b. Demonstrate aesthetic effects.
   c. Demonstrate the qualities of products and workmanship.
   d. Demonstrate successful installation of interfaces between components and systems.
   e. Perform preconstruction testing to determine system performance.
2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

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

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

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

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

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

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

1.3 ACTION SUBMITTALS

1.4 INFORMATIONAL SUBMITTALS

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

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

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

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

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

1.5 CONTRACTOR'S QUALITY-CONTROL PLAN

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

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

1. Project quality-control manager may also serve as Project superintendent .

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

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

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

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

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

1.6 REPORTS AND DOCUMENTS

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

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Description of the Work and test and inspection method.
6. Identification of product and Specification Section.
7. Complete test or inspection data.
8. Test and inspection results and an interpretation of test results.

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

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

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

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
3. Other required items indicated in individual Specification Sections.

1.7 QUALITY ASSURANCE

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

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products

from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

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

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

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

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

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

1.8 QUALITY CONTROL

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

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

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

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.
   a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

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

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

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

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

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

F. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

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

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

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

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

3.2 REPAIR AND PROTECTION

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

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

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

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

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 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," "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": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

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.

1.2 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.

1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations, List: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; (see FGIA).
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; www.concrete.org.
9. ACP - American Clean Power; (Formerly: American Wind Energy Association); www.cleanpower.org.
10. ACPA - American Concrete Pipe Association; www.concretepipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; (see PLIB).
21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
22. AMPP - Association for Materials Protection and Performance; www.ampp.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA/SCST - Association of Official Seed Analysts (The)/Society of Commercial Seed Technologists (The); www.analyzeseeds.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASA - Acoustical Society of America; www.acousticalsociety.org.
30. ASCE - American Society of Civil Engineers; www.asce.org.
31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (see ASCE).
32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
33. ASME - ASME International; American Society of Mechanical Engineers (The)
34. ASSE - ASSE International; (American Society of Sanitary Engineering); www.asse-plumbing.org.

35. ASSP - American Society of Safety Professionals; www.assp.org.
36. ASTM - ASTM International; www.astm.org.
37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
38. AVIXA - Audiovisual and Integrated Experience Association; www.avixa.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - Business and Institutional Furniture Manufacturer's Association; www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; www.bwfbadminton.com.
50. CARB - California Air Resources Board; www.arb.ca.gov.
51. CDA - Copper Development Association Inc.; www.copper.org.
52. CE - Conformite Europeenne (European Commission); www.ec.europa.eu/growth/single-market/ce-marking.
53. CEA - Canadian Electricity Association; www.electricity.ca.
54. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
55. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
56. CGA - Compressed Gas Association; www.cganet.com.
57. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
58. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
59. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
60. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
61. CPA - Composite Panel Association; www.compositepanel.org.
62. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
63. CRRC - Cool Roof Rating Council; www.coolroofs.org.
64. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
65. CSA - CSA Group; www.csagroup.org.
66. CSI - Cast Stone Institute; www.caststone.org.
67. CSI - Construction Specifications Institute (The); www.csiresources.org.
68. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
69. CTA - Consumer Technology Association; www.cta.tech.
70. CTI - Cooling Technology Institute; www.coolingtechnology.org.
71. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
72. DHA - Decorative Hardwoods Association; www.decorativehardwoods.org.
73. DHI - Door and Hardware Institute; www.dhi.org.
74. ECIA - Electronic Components Industry Association; www.ecianow.org.
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. EOS/ESD - EOS/ESD Association, Inc.; Electrostatic Discharge Association; www.esda.org.
78. ESTA - Entertainment Services and Technology Association; www.esta.org.
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.

81. FGIA - Fenestration and Glazing Industry Alliance; https://fgiaonline.org.
82. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
83. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
84. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
85. FM Global - FM Global; www.fmglobal.com.
86. FRSA - Florida Roofing and Sheet Metal Contractors Association, Inc.; www.floridaroof.com.
87. FSA - Fluid Sealing Association; www.fluidsealing.com.
88. FSC - Forest Stewardship Council U.S.; www.fscus.org.
89. GA - Gypsum Association; www.gypsum.org.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HMMA - Hollow Metal Manufacturers Association; (see NAAMM).
93. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
94. IAS - International Accreditation Service; www.iasonline.org.
95. ICC - International Code Council; www.iccsafe.org.
96. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
97. ICPA - International Cast Polymer Association (The); www.theicpa.com.
98. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
99. IEC - International Electrotechnical Commission; www.iec.ch.
100. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
101. IES - Illuminating Engineering Society; www.ies.org.
102. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
103. IGMA - Insulating Glass Manufacturers Alliance; (see FGIA).
104. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
105. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
106. Intertek - Intertek Group; www.intertek.com.
107. ISA - International Society of Automation (The); www.isa.org.
108. ISFA - International Surface Fabricators Association; www.isfanow.org.
109. ISO - International Organization for Standardization; www.iso.org.
110. ITU - International Telecommunication Union; www.itu.int.
111. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
112. LPI - Lightning Protection Institute; www.lightning.org.
113. MBMA - Metal Building Manufacturers Association; www.mbma.com.
114. MCA - Metal Construction Association; www.metalconstruction.org.
115. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
116. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
117. MHI - Material Handling Industry; www.mhi.org.
118. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
119. MPI - Master Painters Institute; www.paintinfo.com.
120. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.; www.msshq.org.
121. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
122. NACE - NACE International; (National Association of Corrosion Engineers International); (see AMPP).
123. NADCA - National Air Duct Cleaners Association; www.nadca.com.

124. NAIMA - North American Insulation Manufacturers Association; www.insulationinstitute.org.
125. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
126. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
127. NBI - New Buildings Institute; www.newbuildings.org.
128. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
129. NCMA - National Concrete Masonry Association; www.ncma.org.
130. NEBB - National Environmental Balancing Bureau; www.nebb.org.
131. NECA - National Electrical Contractors Association; www.necanet.org.
132. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
133. NEMA - National Electrical Manufacturers Association; www.nema.org.
134. NETA - InterNational Electrical Testing Association; www.netaworld.org.
135. NFHS - National Federation of State High School Associations; www.nfhs.org.
136. NFPA - National Fire Protection Association; www.nfpa.org.
137. NFPA - NFPA International; (see NFPA).
138. NFRC - National Fenestration Rating Council; www.nfrc.org.
139. NGA - National Glass Association; www.glass.org.
140. NHLA - National Hardwood Lumber Association; www.nhla.com.
141. NLGA - National Lumber Grades Authority; www.nlga.org.
142. NOFMA - National Oak Flooring Manufacturers Association; (see NWFA).
143. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
144. NRCA - National Roofing Contractors Association; www.nrca.net.
145. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
146. NSF - NSF International; www.nsf.org.
147. NSI - Natural Stone Institute; www.naturalstoneinstitute.org.
148. NSPE - National Society of Professional Engineers; www.nspe.org.
149. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
150. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
151. NWFA - National Wood Flooring Association; www.nwfa.org.
152. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
153. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
154. PDI - Plumbing & Drainage Institute; www.pdionline.org.
155. PLASA - PLASA; www.plasa.org.
156. PLIB - Pacific Lumber Inspection Bureau; www.plib.org.
157. PVCPA - Uni-Bell PVC Pipe Association; www.uni-bell.org.
158. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
159. RFCI - Resilient Floor Covering Institute; www.rfci.com.
160. RIS - Redwood Inspection Service; (see WWPA).
161. SAE - SAE International; www.sae.org.
162. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
163. SDI - Steel Deck Institute; www.sdi.org.
164. SDI - Steel Door Institute; www.steeldoor.org.
165. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
166. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (see ASCE).
167. SIA - Security Industry Association; www.securityindustry.org.
168. SJI - Steel Joist Institute; www.steeljoist.org.
169. SMA - Screen Manufacturers Association; www.smainfo.org.

170. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
171. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
172. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
173. SPIB - Southern Pine Inspection Bureau; www.spib.org.
174. SPRI - Single Ply Roofing Industry; www.spri.org.
175. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
176. SSINA - Specialty Steel Industry of North America; www.ssina.com.
177. SSPC - SSPC: The Society for Protective Coatings; (see AMPP).
178. STI/SPFA - Steel Tank Institute/Steel Plate Fabricators Association; www.steeltank.com.
179. SWI - Steel Window Institute; www.steelwindows.com.
180. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
181. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
182. TCNA - Tile Council of North America, Inc.; www.tcnatile.com.
183. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.kbcdco.tema.org.
184. TIA - Telecommunications Industry Association (The); www.tiaonline.org.
185. TMS - The Masonry Society; www.masonrysociety.org.
186. TPI - Truss Plate Institute; www.tpinst.org.
187. TPI - Turfgrass Producers International; www.turfgrasssod.org.
188. TRI - Tile Roofing Industry Alliance; www.tileroofing.org.
189. UL - Underwriters Laboratories Inc.; www.ul.org.
190. UL LLC - UL LLC; www.ul.com.
191. USAV - USA Volleyball; www.usavolleyball.org.
192. USGBC - U.S. Green Building Council; www.usgbc.org.
193. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
194. WA - Wallcoverings Association; www.wallcoverings.org.
195. WCLIB - West Coast Lumber Inspection Bureau; (see PLIB).
196. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
197. WDMA - Window & Door Manufacturers Association; www.wdma.com.
198. WI - Woodwork Institute; www.woodworkinstitute.com.
199. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
200. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from U.S. Government Publishing Office; www.govinfo.gov.

2. DOD - U.S. Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
3. DSCC - Defense Supply Center Columbus; (see FS).
4. FED-STD - Federal Standard; (see FS).
5. FS - Federal Specification; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from U.S. General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
6. MILSPEC - Military Specification and Standards; (see DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (see USAB).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Section 011200 "Multiple Contract Summary" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.
3. Section 012100 "Allowances" for allowance for metered use of temporary utilities.

1.2 USE CHARGES

A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

1.3 INFORMATIONAL SUBMITTALS

A. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

B. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

C. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by Owner. Include the following:

1. Methods used to meet the goals and requirements of Owner.
2. Concrete cutting method(s) to be used.

3. Location of construction devices on the site.
4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with Owner.
6. Indicate locations of sensitive areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

B. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices:

1. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
2. Owner will provide conditioned interior space for field offices upon completion of demolition and enclosure.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents, including file cabinets, plan tables, plan racks, and bookcases.
2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack and marker boards.
3. Drinking water and private toilet.
4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed.
    a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    b. Maintain negative air pressure within work area, using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Water Service:

1. Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted .

D. Electric Power Service:

1. Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Temporary Erosion and Sedimentation Control:

1. Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."
2. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, in accordance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
    a. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
    b. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
    c. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
    d. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

C. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Installation.
2. Cutting and patching.
3. Coordination of Owner's portion of the Work.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for coordination of , and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site .

1. Prior to submitting cutting and patching plan , review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
   a. Contractor's superintendent.
   b. Trade supervisor responsible for cutting operations.

c. Trade supervisor(s) responsible for patching of each type of substrate.
d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
   a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.5 CLOSEOUT SUBMITTALS

1.6 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Professional Engineer Qualifications: Refer to Section 014000 "Quality Requirements."

C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. 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 that results in

increased maintenance or decreased operational life or safety. Operational elements include the following:

a. Primary operational systems and equipment.
b. Fire separation assemblies.
c. Air or smoke barriers.
d. Fire-suppression systems.
e. Plumbing piping systems.
f. Mechanical systems piping and ducts.
g. Control systems.
h. Communication systems.
i. Fire-detection and -alarm systems.
j. Conveying systems.
k. Electrical wiring systems.
l. Operating systems of special construction.
m. .

3. Other Construction Elements: Do not cut and patch other construction elements or 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. Other construction elements include but are not limited to the following:
   a. Water, moisture, or vapor barriers.
   b. Membranes and flashings.
   c. Exterior curtain-wall construction.
   d. Sprayed fire-resistive material.
   e. Equipment supports.
   f. Piping, ductwork, vessels, and equipment.
   g. Noise- and vibration-control elements and systems.
   h. .
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. In-Place Materials: Use materials for patching 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 provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. 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.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, 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. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. 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. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. 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 in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.

B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

A. 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 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

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.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.6 CUTTING AND PATCHING

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. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. 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.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."

F. 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 minimize interruption to occupied areas.

G. 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 neatly to minimum 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 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.

H. 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 practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical 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. 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, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final

paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's construction personnel and Owner's separate contractors.

1. Provide temporary facilities required for Owner-furnished, Contractor-installed and Owner-furnished, Owner-installed products.
2. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Contractor-installed and Owner-furnished, Owner-installed products.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel and Owner's separate contractors.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel and Owner's separate contractors at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. 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 waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.
   a. Use containers intended for holding waste materials of type to be stored.
4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

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 in accordance with 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. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." Section 017419 "Construction Waste Management and Disposal."

H. 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.

I. 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.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 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. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.11 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017400 - WARRANTIES AND BONDS

PART 1 - RELATED DOCUMENTS

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

B. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

C. General closeout requirements are included in Section "Project Closeout."

D. Specific requirements for warranties for the Work and products and installation that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.

E. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

F. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, right and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

F. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.
2. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
3. Refer to individual Sections of Divisions-2 through -16 for specific content requirements, and particular requirements for submittal of special warranties.

B. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
2. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the 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 the installer.
3. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name of the Contractor.
4. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (not applicable).

PART 3 - EXECUTION

3.1 Provide warranties and bonds on products and installations as required under the various sections of this specification.

END OF SECTION 017400

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Recycling nonhazardous demolition and construction waste.
2. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordination of responsibilities for waste management.
2. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.
3. Section 044313.13 "Anchored Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.
4. Section 044313.16 "Adhered Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.
5. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 ACTION SUBMITTALS

1.6 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Universal certified by EPA-approved certification program.

B. Refrigerant Recovery Technician Qualifications: Comply with requirements in Section 024119 "Selective Demolition."

C. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

D. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final Completion procedures.
3. List of incomplete items.
4. Submittal of Project warranties.
5. Final cleaning.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Section 017900 "Demonstration and Training" for requirements to train Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

1.5 MAINTENANCE MATERIAL SUBMITTALS

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
2. Submit Final Completion photographic documentation.

1.8 LIST OF INCOMPLETE ITEMS

A. Organization of List: 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, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, 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.
    d. Name of Contractor.
    e. Page number.
4. Submit list of incomplete items in the following format:
    a. PDF Electronic File: Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit by email to Architect.

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.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
   a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
i. Vacuum and mop concrete.
j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
l. Remove labels that are not permanent.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.
q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Clean strainers.
s. Leave Project clean and ready for occupancy.

3.2 CORRECTION OF THE WORK

A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Architect . Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.

4. Date of submittal.
5. Name and contact information for Contractor.
6. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:

1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Gas leak.

3. Water leak.
4. Power failure.
5. Water outage.
6. System, subsystem, or equipment failure.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Operating standards.
3. Operating procedures.
4. Wiring diagrams.
5. Control diagrams.
6. Piped system diagrams.
7. Precautions against improper use.
8. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.

5. Operating characteristics.
6. Limiting conditions.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component

incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Aligning, adjusting, and checking instructions.
2. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for general closeout procedures.
2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of Record Drawings as follows:
    a. Initial Submittal:
        1) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
        2) Submit Record Digital Data Files and one set(s) of plots.
        3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    b. Final Submittal:
        1) Submit PDF electronic files of scanned Record Prints and set(s) of file prints.
        2) Print each drawing, whether or not changes and additional information were recorded.
    c. Final Submittal:
        1) Submit one paper-copy set(s) of marked-up record prints.

2) Submit Record Digital Data Files and set(s) of Record Digital Data File plots.
3) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.
   e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Locations and depths of underground utilities.
   d. Revisions to routing of piping and conduits.
   e. Revisions to electrical circuitry.
   f. Duct size and routing.
   g. Locations of concealed internal utilities.
   h. Changes made by Change Order or Construction Change Directive.
   i. Changes made following Architect's written orders.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
    a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
    b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders , Record Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic file .

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders , Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file .

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file .

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit 1 copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:
   a. Name of Project.
   b. Name and address of videographer.
   c. Name of Architect.
   d. Name of Construction Manager.
   e. Name of Contractor.
   f. Date of video recording.
2. Transcript:
   a. Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
   b. Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
3. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Documentation: Review the following items in detail:
    a. Emergency manuals.
    b. Systems and equipment operation manuals.
    c. Systems and equipment maintenance manuals.
    d. Product maintenance manuals.
    e. Project Record Documents.
    f. Identification systems.
    g. Warranties and bonds.
    h. Maintenance service agreements and similar continuing commitments.
2. Emergencies: Include the following, as applicable:
    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.
3. Operations: Include the following, as applicable:
    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.

g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

4. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.
5. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.
6. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning.
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

1.7 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner , through Construction Manager, with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.9 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.

1. Submit video recordings on CD-ROM or thumb drive .
2. File Hierarchy: Organize folder structure and file locations in accordance with Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged in accordance with Project Manual table of contents:
   a. Name of Contractor/Installer.
   b. Business address.
   c. Business phone number.
   d. Point of contact.
   e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.
   a. Produce segments to present a single significant piece of equipment per segment.
   b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
   c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017900

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 017300 "Execution" for cutting and patching procedures.
3. Section 013516 "Alteration Project Procedures" for general protection and work procedures for alteration projects.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse .

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property , for dust control and , for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

1.5 CLOSEOUT SUBMITTALS

1.6 QUALITY ASSURANCE

1.7 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.

D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

E. Survey of Existing Conditions: Record existing conditions by use of and .

1. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Work in Historic Areas: Selective demolition may be performed only in areas of Project that are not designated as historic. In historic spaces, areas, and rooms, or on historic surfaces, the terms "demolish" or "remove" shall mean historic "removal" or "dismantling" as specified in Section 024296 "Historic Removal and Dismantling."

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Bar supports.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:
   a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
2. Mechanical splice couplers.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage and to avoid damaging coatings on steel reinforcement.

1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60 , deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

C. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain .

2.4 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.
2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Install welded-wire reinforcement in longest practicable lengths.

1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."
   a. For reinforcement less than W4.0 or D4.0, continuous support spacing to not exceed 12 inches.
2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches for plain wire and 8 inches for deformed wire.
3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
4. Lace overlaps with wire.

3.3 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.
2. Continue reinforcement across construction joints unless otherwise indicated.
3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

A. Comply with ACI 117.

END OF SECTION 032000

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, and grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Architect.

E. Samples: For waterstops and vapor retarder.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturer and testing agency.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Curing compounds.
6. Floor and slab treatments.
7. Bonding agents.
8. Vapor retarders.
9. Joint-filler strips.

C. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

D. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

D. Moisture Vapor Reduction Admixture Testing Agent Qualifications:

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

1.9 WARRANTY

A. Moisture Vapor Reduction Admixture (MVRA):

1. MVRA must be installed according to, and in compliance with, the manufacturer's published data sheet to include, but not limited to:
   a. Dosing instructions.
   b. Onsite representation requirements.
   c. Use of an ASTM E 1745 vapor retarder, installed following ASTM E 1643 and ASTM F 710 guidelines; slabs on deck do not require a vapor barrier..
2. Manufacturer's Warranty: To include:
   a. Term: Life of the concrete.
   b. Repair and/or removal of failed flooring.
   c. Placement of a topical moisture remediation system.
   d. Replacement of flooring materials like original installed to include material and labor.
3. Adhesion Warranty: MVRA Manufacturer shall provide an adhesion warranty to match the term of the adhesive and/or primer manufacturer's material defect warranty upon MVRA manufacturer's acceptance of field bond test.

1.10 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301).
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301) and as follows:

1. Maintain concrete temperature below 90 deg F) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301).
2. ACI 117).

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch), minimum.

D. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch) to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch) in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60), deformed.

B. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A 615/A 615M, Grade 60), deformed bars, assembled with clips.

C. Plain-Steel Wire: ASTM A 1064/A 1064M, as drawn.

D. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60), plain-steel bars, cut true to length with ends square and free of burrs.

2.5 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I , gray.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 1N coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
3. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
4. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
5. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

A. Moisture Vapor Reduction Admixture: For use in all interior slabs on ground and slabs on deck.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Barrier One Incorporated; High Performance Concrete Admixture or comparable product by another manufacturer.
2. Failure to provide a product that meets or exceeds the MVRA warranty requirements of Part 1 and the MVRA field quality control requirements of Part 3 will result in all subsequent testing and slab remediation costs being borne by the ready mix supplier.
3. Description: Concrete moisture vapor reduction admixture for all interior slab (on ground and elevated) construction shall be non-toxic, liquid admixture, specifically designed to have a natural chemical reaction with pre-existing elements inside the concrete to eliminate the route of moisture vapor emission through the slab by restricting the integral capillary system. Chemical reaction shall form a permanent barrier (capillary break) that is integral to the concrete, insoluble, and irremovable.

2.7 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class C. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils) thick.

2.8 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd.) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.9 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, nonload bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.10 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301).

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Normal-weight concrete.

1. Minimum Compressive Strength: 3000 psi) at 28 days.
2. Maximum W/C Ratio: 0.50.
3. Slump Limit: 5 inches), plus or minus 1 inch).
4. Air Content: 2 to 4 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch) nominal maximum aggregate size.

B. Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 3000 psi) at 28 days.
2. Slump Limit: 4 inches), plus or minus 1 inch).
3. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of 4.0 lb/cu. yd.)
4. Moisture Vapor Reduction Admixture: For mix designs ranging from 0.42 to 0.52 w/cm, dose at 14 ounces per 100 pounds of total cementitious materials. Remove an equal amount of water from the mix. Add separately from other admixtures at the tail end of the load. Mix designs below 0.42 and above 0.52 may require adjustment.

C. Building Walls: Normal-weight concrete.

1. Minimum Compressive Strength: 3000 psi) at 28 days.
2. Slump Limit: 8 inches) for concrete with verified slump of 2 to 4 inches) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch).

2.12 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.13 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117).

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch) for smooth-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F) for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318) and ACI 301) for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR-RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 12inches) and seal with manufacturers recommended tape.

3.6 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches) into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch) or more than 1 inch) below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301).

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301).
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.9 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces or to be covered with a coating or covering material applied directly to concrete.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces to be covered with resilient flooring, carpet, and ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
2. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch).
3. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom.
4. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

3.11 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches) high unless otherwise indicated, and extend base not less than 6 inches) in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
3. Minimum Compressive Strength: 3000 psi) at 28 days.
4. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301) for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch) lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.

c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
   a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.
   b. Do not apply curing compound to concrete receiving polished concrete floor slabs.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
   a. Do not apply curing compound to concrete receiving polished concrete floor slabs.

3.13 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

3.14 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine

C. Aggregate passing a No. 16) sieve, using only enough water for handling and placing.

D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch) in any dimension to solid concrete. Limit cut depth to 3/4 inch). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding

agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

G. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd.), but less than 25 cu. yd.), plus one set for each additional 50 cu. yd.) or fraction thereof.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
5. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi).
6. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
7. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
8. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
9. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
10. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

C. Testing of Slabs Containing MVRA:

1. The moisture vapor reduction admixture (MVRA) manufacturer will perform all moisture testing in accordance with this specification and will issue project specific warranties

prior to installation of any slab finishes; no further field slab moisture nor pH testing shall be required.

a. Failure to provide a product that meets or exceeds these requirements will result in all subsequent testing and slab remediation costs being borne by the ready mix supplier.

2. A representative or agent of the moisture vapor reduction admixture (MVRA) manufacturer must be present at the jobsite during placement of all MVRA treated concrete. Do not proceed without this representative being present.
3. Field testing technician shall, at the expense of the MVRA Manufacturer, procure at least one 4 inch (102 mm) cylinder from every day of placement of MVRA dosed concrete for the purpose of subsequent hydraulic conductivity/coefficient of permeability testing.
4. All cylinders shall be independently lab tested in accordance with ASTM D 5084 at the expense of the MVRA manufacturer.
5. Test results must conform to specified limits.
   a. Should any cylinder from any day of placement deliver results in excess of 6.0 E-08 cm/sec, the concrete moisture vapor reduction admixture manufacturer shall procure, at their expense, a core (or cores) from that day of placement. This core (cores) shall be sent to an independent laboratory for hydraulic conductivity (coefficient or permeability) per ASTM D 5084.
   b. Should any core deliver results in excess of 6.0 E-08 cm/sec per ASTM D 5084, the concrete moisture vapor reduction admixture manufacturer shall provide, at their expense, a topical moisture mitigation system for all areas not meeting the stated limit.
6. Proceeding with placement of concrete dosed with the MVRA without the required representation will result in the contractor bearing the cost to core and ship appropriate material for testing per ASTM D 5084.

END OF SECTION 033000

SECTION 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry-joint reinforcement.
5. Embedded flashing.
6. Miscellaneous masonry accessories.

B. Related Requirements:

1. Division 7 Section "Foamed-In-Place Masonry Wall Insulation" for masonry-cell insulation.
2. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.
3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each type and size of the following:

1. Masonry units.
   a. Include data on material properties and material test reports substantiating compliance with requirements.
   b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
4. Reinforcing bars.
5. Joint reinforcement.

C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.

E. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches) down both sides of walls, and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength (f'm) of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.
   a. For Concrete Masonry Unit: f'm = 1900 psi.

2.3 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

B. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi) 1900 psi.
2. Density Classification: Normal weight.
3. Size (Width): Manufactured to dimensions 3/8 inch) less-than-nominal dimensions.
4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

5. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

2.5 CONCRETE AND MASONRY LINTELS

A. General: Provide one of the following:

B. Concrete Lintels: ASTM C 1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.

C. Concrete Lintels and Sills: Precast or formed-in-place concrete lintels complying with requirements in Section 033000 "Cast-in-Place Concrete," and with reinforcing bars indicated or required to support loads indicated. Cure precast lintels and sills by same method used for concrete masonry units..

2.6 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

E. Aggregate for Grout: ASTM C 404.

F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

G. Water: Potable.

2.7 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60).

B. Masonry Joint Reinforcement, General: ASTM A 951.

1. Interior Walls: Hot-dip galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized, carbon steel.

3. Wire Size for Side Rods: 8 gauge or 0.162-inch diameter.
4. Wire Size for Cross Rods: 9 gauge or 0.148-inch diameter.
5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches (407 mm) o.c.
6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Single-Wythe Masonry: Truss type with single pair of side rods.

D. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A 951/A 951M.

E. General: Ties and anchors shall extend at least 1-1/2 inches) into masonry but with at least a 5/8-inch) cover on outside face.

2.8 EMBEDDED FLASHING MATERIALS

A. Flexible Flashing: Use the following unless otherwise indicated:

1. Asphalt-Coated Copper Flashing: 7-oz./sq. ft. (2-kg/sq. m) copper sh7-oz./sq. ft.asphalt. Use only where flashing is fully concealed in masonry.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).

2.10 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.
3. For exterior masonry, use portland cement-lime mortar.
4. For reinforced masonry, use portland cement-lime mortar.
5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For masonry below grade or in contact with earth, use Type S.
2. For reinforced masonry, use Type S.
3. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
4. For interior nonload-bearing partitions, Type O may be used instead of Type N.

D. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or course) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 11 inches) as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that would impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Build chases and recesses to accommodate items specified in this and other Sections.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch) or minus 1/4 inch).
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch) in a story height or 1/2 inch) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet), or 1/2-inch) maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet), 1/4 inch in 20 feet), or 1/2-inch) maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet), 3/8 inch in 20 feet), or 1/2-inch) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet), 1/4 inch in 20 feet), or 1/2-inch) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet), 3/8 inch in 20 feet), or 1/2-inch) maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet), or 1/2-inch) maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch).

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch), with a maximum thickness limited to 1/2 inch).
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch).
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch) or minus 1/4 inch).
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch).

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch) horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches). Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch) horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Fill cores in hollow CMUs with grout 24 inches) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

H. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.
2. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

A. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.

1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
2. Wet joint surfaces thoroughly before applying mortar.
3. Rake out mortar joints for pointing with sealant.

B. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch) and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

E. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch) on exterior side of walls, 1/2 inch) elsewhere. Lap reinforcement a minimum of 6 inches).

1. Space reinforcement not more than 16 inches) o.c.
2. Space reinforcement not more than 8 inches) o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches) above and below wall openings and extending 12 inches) beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

3.7 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry as follows:

1. Install preformed control-joint gaskets designed to fit standard sash block.

3.8 LINTELS

A. Provide concrete or masonry lintels where shown and where openings of more than 12 inches) for brick-size units and 24 inches) for block-size units are shown without structural steel or other supporting lintels.

B. Provide minimum bearing of 8 inches) at each jamb unless otherwise indicated.

3.9 FLASHING

A. Install flashing as follows unless otherwise indicated:

1. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch) back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
2. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

3.10 REINFORCED UNIT MASONRY INSTALLATION

A. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches) .

3.11 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.12 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 042200

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Metal bollards.

B. Products furnished, but not installed, under this Section include the following:

1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

C. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
2. Section 042000 "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. 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.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Paint products.
2. Grout.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Metal bollards.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.

D. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

2.2 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

C. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

D. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

E. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) (A4)stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

2.3 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.

C. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

D. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

H. Concrete: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa).

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

2.6 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe Schedule 80 steel pipe 1/4-inch (6.4-mm) wall-thickness rectangular steel tubing steel shapes, as indicated.

B. Fabricate bollards with 3/8-inch- (9.5-mm-) thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch (19-mm) anchor bolts.

C. Fabricate sleeves for bollard anchorage from steel pipe tubing with 1/4-inch- (6.4-mm-) thick steel plate welded to bottom of sleeve. Make sleeves not less than 8 inches (200 mm) deep and 3/4 inch (19 mm) larger than OD of bollard.

2.7 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.8 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for ceiling hung toilet partitions overhead doors and overhead grilles securely to, and rigidly brace from, building structure.

C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.

1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.

1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.3 INSTALLING METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.

1. Do not fill removable bollards with concrete.

B. Anchor bollards in place with concrete footings. Center and align bollards in holes 6 inches (75 mm) above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

C. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting." and Section 099123 "Interior Painting."

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055000

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof-drainage sheet metal fabrications.
2. Low-slope roof sheet metal fabrications.
3. Wall sheet metal fabrications.
4. Miscellaneous sheet metal fabrications.

1.2 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Roof-drainage sheet metal fabrications.
2. Low-slope roof sheet metal fabrications.
3. Wall sheet metal fabrications.
4. Miscellaneous sheet metal fabrications.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.

9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified, 12 inches long by actual width.

D. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested and FM Approvals approved.

B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested and FM Approvals approved, shop is to be listed as able to fabricate required details as tested and approved.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.8 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
   a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
   b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, are to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim are not to rattle, leak, or loosen, and are to remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. FM Approvals Listing: Manufacture and install copings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-120 . Identify materials with name of fabricator and design approved by FM Approvals.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F , ambient; 180 deg F , material surfaces .

2.2 SHEET METALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.

1. Exposed Coil-Coated Finish:
   a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color: As selected by Architect from manufacturer's full range .
3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

C. Stainless Steel Sheet: ASTM A240/A240M, Type 304 , dead soft, fully annealed; with smooth, flat surface.

1. Finish: ASTM A480/A480M, No. 2D (dull, cold rolled) .
   a. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
   b. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
      1) Run grain of directional finishes with long dimension of each piece.
      2) When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.3 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
   c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
2. Fasteners for Copper, Zinc-Tin Alloy-Coated Copper, or Copper-Clad Stainless Steel Sheet: Copper, hardware bronze or passivated Series 300 stainless steel.
3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
4. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

5. Fasteners for Zinc-Coated (Galvanized) or Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329/F2329M.
6. Fasteners for Zinc Sheet: Series 300 stainless steel.

C. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

D. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

E. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

F. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with interlocking counterflashing on exterior face, of same metal as reglet.

1. Source Limitations: Obtain reglets from single source from single manufacturer.
2. Material: Stainless steel, 0.0188 inch thick .
3. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
4. Accessories:
   a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
   b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
5. Finish: Mill .

2.4 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.5 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness .
4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters.

5. Gutter Profile: Style A in accordance with cited sheet metal standard.
6. Expansion Joints: Butt type with cover plate .
7. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen .
8. Gutters with Girth up to 15 Inches (380 mm): Fabricate from the following materials:
   a. Aluminum: 0.032 inch thick.

B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors .

1. Fabricated Hanger Style: Fig. 1-35A in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Manufactured Hanger Style: Fig. 1-34A in accordance with SMACNA's "Architectural Sheet Metal Manual."
3. Fabricate from the following materials:
   a. Aluminum: 0.024 inch thick.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Copings: Fabricate in minimum 96-inch- long, but not exceeding 12-foot- long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight.

1. Coping Profile: Fig. 3-4A in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Joint Style: Butted with expansion space and 6-inch- wide, concealed backup plate .
3. Fabricate from the following materials:
   a. Aluminum: 0.050 inch thick.

B. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch thick.

C. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch thick.

D. Flashing Receivers: Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

2.7 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch- high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.

6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.
9. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance .

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.
   a. Embed hooked flanges of joint members not less than 1 inch into sealant.
   b. Form joints to completely conceal sealant.
   c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
   d. Adjust setting proportionately for installation at higher ambient temperatures.
      1) Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Pretin edges of sheets with solder to width of 1-1/2 inches; however, reduce pretinning where pretinned surface would show in completed Work.
2. Do not solder and aluminum sheet.
3. Do not use torches for soldering.
4. Heat surfaces to receive solder, and flow solder into joint.

a. Fill joint completely.
b. Completely remove flux and spatter from exposed surfaces.

5. Stainless Steel Soldering:
   a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
   b. Promptly remove acid-flux residue from metal after tinning and soldering.
   c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
6. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with joints sealed with sealant.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor and loosely lock back edge of gutter to continuous eave or apron flashing.
8. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches apart.
9. Anchor gutter with gutter brackets spaced not more than 24 inches apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.
10. Anchor gutter with spikes and ferrules spaced not more than 24 inches apart.
11. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet apart. Install expansion-joint caps.
12. Install continuous gutter screens on gutters with noncorrosive fasteners, removable for cleaning gutters.

C. Downspouts:

1. Join sections with 1-1/2-inch telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches o.c.
4. Provide elbows at base of downspout to direct water away from building.
5. Connect downspouts to underground drainage system.

D. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches in direction of water flow.

3.4 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements , sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Copings:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.
   a. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 24-inch centers.
   b. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.
3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches over base flashing.
3. Lap counterflashing joints minimum of 4 inches.
4. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.

3.5 INSTALLATION OF WALL FLASHINGS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

C. Reglets: Installation of reglets is specified in Section 042000 "Unit Masonry."

3.6 INSTALLATION OF MISCELLANEOUS FLASHING

A. Equipment Support Flashing:

1. Coordinate installation of equipment support flashing with installation of roofing and equipment.
2. Weld or seal flashing with elastomeric sealant to equipment support member.

3.7 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

3.9 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

SECTION 099114 - EXTERIOR PAINTING (MPI STANDARDS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Surface preparation and application of paint systems on exterior substrates.
   a. Steel and iron.
   b. Wood.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.

B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.

D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
3. Indicate VOC content.

B. Samples: For each type of topcoat product.

C. Samples for Initial Selection: For each type of topcoat product.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. PPG Paints; PPG Industries, Inc.
3. Sherwin-Williams Company (The).

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior Painting Schedule for the paint category indicated.

C. Source Limitations: Obtain paint from single source from single manufacturer.

2.2 PAINT PRODUCTS

A. MPI Standards: Provide products complying with MPI standards indicated and listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As selected by Architect from manufacturer's full range .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 3.

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

3.3 INSTALLATION

A. Apply paints in accordance with manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.

2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.
4. Collect waste paint by type and deliver to recycling or collection facility.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE

A. Steel and Iron Substrates:

1. Quick-Dry Enamel System MPI EXT 5.1A:
   a. Prime Coat: Primer, alkyd, quick dry, for metal , MPI #76.
   b. Intermediate Coat: Alkyd, quick dry, matching topcoat.
   c. Semigloss Topcoat: Alkyd, quick dry, semigloss (MPI Gloss Level 5) , MPI #81.

END OF SECTION 099114

SECTION 114000 - FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Walk-in refrigeration equipment.

B. Owner-Furnished Equipment: Where indicated, Owner will furnish equipment for installation by Contractor.

1.2 COORDINATION

A. Coordinate foodservice equipment layout and installation with other work, including layout and installation of lighting fixtures, HVAC equipment, and fire-suppression system components.

B. Coordinate locations and requirements of utility service connections.

C. Coordinate sizes, locations, and requirements of the following:

1. Overhead equipment supports.
2. Equipment bases.
3. Floor depressions.
4. Insulated floors.
5. Floor areas with positive slopes to drains.
6. Floor sinks and drains serving foodservice equipment.
7. Roof curbs, equipment supports, and penetrations.

1.3 ACTION SUBMITTALS

A. Product Data

1. Walk-in refrigeration equipment.

B. Include the following:

1. Manufacturer's model number.
2. Accessories and components that will be included for Project.
3. Clearance requirements for access and maintenance.
4. Utility service connections for water, drainage, power, and fuel; include roughing-in dimensions.

C. Shop Drawings: For fabricated equipment. Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.

D. Samples for Initial Selection: For units with factory-applied color finishes.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: For foodservice facilities.

1. Indicate locations of foodservice equipment and connections to utilities.
2. Key equipment using same designations as indicated on Drawings.
3. Include plans and elevations; clearance requirements for equipment access and maintenance; details of equipment supports; and utility service characteristics.

B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For foodservice equipment to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
   a. Product Schedule: For each foodservice equipment item, include the following:
      1) Designation indicated on Drawings.
      2) Manufacturer's name and model number.
      3) List of factory-authorized service agencies including addresses and telephone numbers.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of construction contiguous with foodservice equipment by field measurements before fabrication. Indicate measurements on Coordination Drawings.

1.7 WARRANTY

A. Refrigeration Compressor Warranty: Manufacturer agrees to repair or replace compressors that fail in materials or workmanship within specified warranty period.

1. Failure includes, but is not limited to, inability to maintain set temperature.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NSF Standards: Provide equipment that bears NSF Certification Mark or UL Classification Mark certifying compliance with applicable NSF standards.

B. UL Certification: Provide electric and fuel-burning equipment and components that are evaluated by UL for fire, electric shock, and casualty hazards according to applicable safety standards, and that are UL certified for compliance and labeled for intended use.

C. Steam Equipment: Provide steam-generating and direct-steam heating equipment that is fabricated and labeled to comply with 2013 ASME Boiler and Pressure Vessel Code.

D. Regulatory Requirements: Install equipment to comply with the following:

1. ASHRAE 15, "Safety Code for Mechanical Refrigeration."

2.2 WALK-IN REFRIGERATION EQUIPMENT

A. Walk-in Refrigeration Units :

1. Basis-of-Design Product: Subject to compliance with requirements, provide Bally Outdoor Walk-in Freezer w/ sloped EPDM coated roof rated for 30psf snow load.
   a. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      1) American Cooler Technologies
      2) Norlake Commercial Refrigeration
2. Description: Freezer .
   a. Wall and Ceiling Panels: Foamed in place insulating panels.
      1) Walls: 4" thick, Vertical, Embossed Galvalume (26 GA) skinned
      2) Floor: 4" thick, Smooth, Aluminum (10 GA) skinned
      3) Roof: 4" thick, Embossed Galvalume (26 GA) skinned
   b. Doors:
      1) Hinges: Two per door Self-closing and spring loaded; three per door .
      2) Latch: Edge-mounted, positive-type latch with cylinder lock .
      3) Include safety-release handle that opens door from inside when door is locked.
   c. Door Accessories:
      1) Vision port.
      2) Pressure relief port.
      3) Threshold: Stainless steel, factory installed.
      4) Anticondensate heater at freezer doors.
   d. Vaporproof Lighting Fixtures: .
      1) Control: Neon pilot light and toggle switch located on exterior of door panel.
      2) Quantity: 2 .

e. Refrigeration System: Remote system with preassembled condensing unit and evaporator assemblies .
   1) Exterior Condensing Units: Include winter control, crankcase heater, and enclosed weatherproof housing.
   2) Operating Temperature: -10F internal @ 95F w/ 55% RH .
f. Temperature Monitoring System: Electronic monitoring and remote audible alarm system that warns when temperatures register 10 deg F above or below set temperature tied into existing building managment system .
g. Closure Panels and Trim: Include closure panels and trim .
h. Electrical Service: Equip unit for connection to service indicated on Drawings .

3. Finishes:
   a. Closure Panels and Trim: Matched to exposed exterior finish of panels .

2.3 MISCELLANEOUS MATERIALS

A. Installation Accessories, General: NSF certified for end-use application indicated.

B. Elastomeric Joint Sealant: ASTM C920; silicone. Type S (single component), Grade NS (nonsag), Class 25, Use NT (nontraffic) related to exposure, and Use M, G, A, or O as applicable to joint substrates indicated.

1. Public Health and Safety Requirements:
   a. Sealant is certified for compliance with NSF standards for end-use application indicated.
   b. Washed and cured sealant complies with the FDA's regulations for use in areas that come in contact with food.
2. Cylindrical Sealant Backing: ASTM C1330, Type C, closed-cell polyethylene, in diameter greater than joint width.

2.4 FINISHES

A. Stainless Steel Finishes:

1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
   a. Run grain of directional finishes with long dimension of each piece.
   b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

B. Powder-Coat Finishes: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard, baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install foodservice equipment level and plumb, according to manufacturer's written instructions.

1. Connect equipment to utilities.
2. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.

B. Complete equipment assembly where field assembly is required.

1. Provide closed butt and contact joints that do not require a filler.
2. Grind field welds on stainless steel equipment until smooth and polish to match adjacent finish.

C. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and with requirements of authorities having jurisdiction.

D. Install cabinets and similar equipment on bases in a bed of sealant.

E. Install closure-trim strips and similar items requiring fasteners in a bed of sealant.

F. Install joint sealant in joints between equipment and abutting surfaces with continuous joint backing unless otherwise indicated. Produce airtight, watertight, vermin-proof, sanitary joints.

3.2 CLEANING AND PROTECTING

A. After completing installation of equipment, repair damaged finishes.

B. Clean and adjust equipment as required to produce ready-for-use condition.

C. Protect equipment from damage during remainder of the construction period.

3.3 DEMONSTRATION

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

END OF SECTION 114000

SECTION 221316 – CONDENSATE DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 PVC PIPE AND FITTINGS

A. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.

B. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

C. Adhesive Primer: ASTM F 656.

D. Solvent Cement: ASTM D 2564.

2.3 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
3. Unshielded, Nonpressure Transition Couplings:

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Fernco Inc.
2) Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

b. Standard: ASTM C 1173.
c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
d. Sleeve Materials:

1) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
2) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping at indicated slopes.

E. Install piping free of sags and bends.

F. Install fittings for changes in direction and branch connections.

G. Make changes in direction for drainage piping using appropriate branches, bends, and long-sweep bends. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

H. Install condensate drainage piping at the following minimum slopes unless otherwise indicated:

1. Condensate Drainage Piping: 2 percent downward in direction of flow.

I. Install aboveground PVC piping according to ASTM D 2665.

J. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

K. Install sleeves for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION

A. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 Appendixes.

3.3 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in OD's.
2. In Drainage Piping: Unshielded, nonpressure transition couplings.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with following.

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
3. Install individual, straight, horizontal piping runs:

a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

B. Install hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 48 inches with 3/8-inch rod.
2. NPS 3: 48 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.
4. NPS 6 and NPS 8: 48 inches with 3/4-inch rod.

C. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

C. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.6 IDENTIFICATION

A. Identify exposed drainage piping.

3.7 FIELD QUALITY CONTROL

A. Test drainage piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
4. Prepare reports for tests and required corrective action.

3.8 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.9 PIPING SCHEDULE

A. Aboveground, drainage piping NPS 4 and smaller shall be any of the following:

1. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
2. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

END OF SECTION

SECTION 232300 - REFRIGERANT PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes refrigerant piping used for freezer application.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of valve and refrigerant piping specialty indicated. Include pressure drop based on manufacturer's test data.

1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."

1.5 PRODUCT STORAGE AND HANDLING

A. Store piping in a clean and protected area with end caps in place to ensure that piping interior and exterior are clean when installed.

PART 2 - PRODUCTS

2.1 VALVES AND SPECIALTIES

A. Service Valves:

1. Body: Forged brass with brass cap including key end to remove core.
2. Core: Removable ball-type check valve with stainless-steel spring.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Copper spring.
5. Working Pressure Rating: 500 psig.

B. Thermostatic Expansion Valves: Comply with ARI 750.

1. Body, Bonnet, and Seal Cap: Forged brass or steel.
2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.

3. Packing and Gaskets: Non-asbestos.
4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
5. Suction Temperature: 40 deg F.
6. Superheat: Adjustable.
7. End Connections: Socket, flare, or threaded union.
8. Working Pressure Rating: 450 psig .

2.2 REFRIGERANTS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Per freezer vendor equipment information, refrigerant R448A is being utilized. Subject to compliance with requirements, provide products by one of the following:

1. Atofina Chemicals, Inc.
2. DuPont Company; Fluorochemicals Div.
3. Honeywell, Inc.; Genetron Refrigerants.

PART 3 - EXECUTION

3.1 VALVE AND SPECIALTY APPLICATIONS

A. Install service valves for gage taps at strainers if they are not an integral part of strainers.

B. Install thermostatic expansion valves as close as possible to distributors on evaporators.

1. Install valve so diaphragm case is warmer than bulb.
2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.

C. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Shop Drawings/equipment vendor.

B. Install refrigerant piping according to ASHRAE 15.

C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping adjacent to machines to allow service and maintenance.

F. Install piping free of sags and bends.

G. Select system components with pressure rating equal to or greater than system operating pressure.

H. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.

I. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection.

J. Slope refrigerant piping as follows:

1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
2. Install traps and double risers to entrain oil in vertical runs.
3. Liquid lines may be installed level.

K. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.

L. Install sleeves for piping penetrations of walls, ceilings, and floors

3.3 PIPE JOINT CONSTRUCTION

A. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."

1. Use Type BcuP, copper-phosphorus alloy for joining copper socket fittings with copper pipe.
2. Use Type BAg, cadmium-free silver alloy for joining copper with bronze or steel.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. Comply with ASME B31.5, Chapter VI.

2. Test refrigerant piping and specialties. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in Part 1 "Performance Requirements" Article.

    a. Fill system with nitrogen to the required test pressure.
    b. System shall maintain test pressure at the manifold gage throughout duration of test.
    c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
    d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

3.5 SYSTEM CHARGING

A. Charge system using the following procedures:

1. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers (). If vacuum holds for 12 hours, system is ready for charging.
2. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.

3.6 ADJUSTING

A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.

B. Adjust high pressure switch settings to avoid short cycling in response to fluctuating suction pressure.

C. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:

1. Verify that compressor oil level is correct.
2. Open compressor suction and discharge valves.
3. Open refrigerant valves.
4. Check open compressor-motor alignment and verify lubrication for motors and bearings.

END OF SECTION

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.

B. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2, TYPE USE and Type SER.

2.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger, except electric range branch circuit wiring, which shall be No. 8 AWG Aluminum.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway or Metal-clad cable, Type MC.

B. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway.

3.3 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.4 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

END OF SECTION

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal conduits, tubing, and fittings.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. EMT: Comply with ANSI C80.3 and UL 797.

C. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

D. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Fittings for EMT:

a. Material: Steel.
b. Type: set screw.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
2. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
3. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Indoors: Apply raceway products as specified below unless otherwise indicated.

1. Exposed, Not Subject to Physical Damage: EMT.

2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

F. Install surface raceways only where required.

G. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Arrange stub-ups so curved portions of bends are not visible above finished slab.

D. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

E. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

F. Support conduit within 12 inches of enclosures to which attached.

G. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

H. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

J. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

L. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.

M. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service raceway enters a building or structure.
3. Where otherwise required by NFPA 70.

N. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

O. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

P. Locate boxes so that cover or plate will not span different building finishes.

Q. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

END OF SECTION

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Hot-mix asphalt patching.

1.3 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. Prime Coat: Minimum surface temperature of 60 deg F.
2. Tack Coat: Minimum surface temperature of 60 deg F.
3. Asphalt Base Course and Binder Course: Minimum surface temperature of 40 deg F and rising at time of placement.
4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ASTM D692/D692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

C. Fine Aggregate: ASTM D1073 , sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

D. Mineral Filler: ASTM D242/D242M , rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: ASTM D6373 binder designation PG 58-28 .

B. Emulsified Asphalt Prime Coat: ASTM D977 emulsified asphalt, or ASTM D2397/D2397M cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

C. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Joint Sealant: ASTM D6690, Type I , hot-applied, single-component, polymer-modified bituminous sealant.

2.4 MIXES

A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.

B. Emulsified-Asphalt Slurry: ASTM D3910, Type 1 .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction , repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

3.3 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd..

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

C. Placing Single-Course Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

D. Placing Two-Course Patch Material: Partially fill excavated pavements with hot-mix asphalt base course mix and, while still hot, compact. Cover asphalt base course with compacted layer of hot-mix asphalt surface course, finished flush with adjacent surfaces.

3.4 REPAIRS

A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.

1. Install leveling wedges in compacted lifts not exceeding 3 inches thick.

B. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch .

1. Clean cracks and joints in existing hot-mix asphalt pavement.
2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.
3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.

3.5 SURFACE PREPARATION

A. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.

B. Herbicide Treatment: Apply herbicide in accordance with manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.

C. Cutback Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd.. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

D. Emulsified Asphalt Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.10 to 0.30 gal./sq. yd. per inch depth. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

E. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd..

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.6 INSTALLATION OF PAVING GEOTEXTILE

A. Apply tack coat uniformly to existing pavement surfaces at a rate of 0.20 to 0.30 gal./sq. yd..

B. Place paving geotextile promptly in accordance with manufacturer's written instructions. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches and transverse joints 6 inches.

C. Protect paving geotextile from traffic and other damage, and place hot-mix asphalt overlay the same day.

3.7 HOT-MIX ASPHALT PLACEMENT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course and binder course in number of lifts and thicknesses indicated.
2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at a minimum temperature of 250 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
2. Complete a section of asphalt base course and binder course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.8 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method in accordance with AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.9 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density, Marshall Test Method: 96 percent of reference laboratory density in accordance with ASTM D6927 , but not less than 94 percent or greater than 100 percent.
2. Average Density, Rice Test Method: 92 percent of reference maximum theoretical density in accordance with ASTM D2041/D2041M, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.10 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:

1. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Surface Course: 1/8 inch .

END OF SECTION 321216

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY

4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

PROJECT TEAM

OWNER
HARFORD COUNTY
PUBLIC SCHOOLS
102 S. HICKORY AVENUE
BEL AIR, MD 21014

STRUCTURAL ENGINEER
SKARTA AND ASSOCIATES
2439 NORTH CHARLES ST.
BALTIMORE, MD 21218
PHONE: 410.366.9384

ARCHITECT
FREDERICK WARD ASSOCIATES
5 S. MAIN STREET
BEL AIR, MD 21014
PHONE: 410.838.7900

MEP ENGINEER
TELEGENT ENGINEER INC.
2216 COMMERCE DRIVE, SUITE 1
FORECT HILL, MD 21050
PHONE: 410.692.5816

ARCHITECTURAL SYMBOLS

ALIGN — ALIGN CONSTRUCTION
GWB2 / 8'-10" AFF — CEILING HEIGHT AND TYPE
CENTER LINE
XX — DOOR TAG
XX — FURNITURE TAG
X — MATERIAL TAG
WT — WALL TAG
SF — STOREFRONT TAG
X — EQUIPMENT AND TOILET ACCESSORY TAG
X — GLAZING TAG
XX — WINDOW TAG
ROOM NAME / XX / XX — ROOM TAG

VIEW TITLE / 1/8" = 1'-0" — VIEW TITLE
1 / A101 — CALLOUT
1 / A101 — FULL BUILDING SECTION
1 / A101 — WALL SECTION
1 / A101 — DETAIL SECTION
1 / A101 — BUILDING ELEVATION
1 / A101 — EXTERIOR ELEVATION
ROOM NAME / NUMBER / AREA / OLF/OCC / OCCUPANTS — ROOM OCCUPANCY TAG

0' 0 — EGRESS TAG
X — DEMOLITION KEYNOTE
X — NEW PLAN / RCP KEYNOTE
1 — REVISION NUMBER
A — REFERENCE GRID
NAME / ELEVATION — REFERENCE LEVEL

NOTE: SEE INDIVIDUAL DRAWING SHEETS FOR ADDITIONAL GRAPHIC SYMBOL LEGENDS.

DRAWING INDEX

NO.	NAME
GENERAL	
T1.0	COVER SHEET
ARCHITECTURAL	
AD.1	DEMOLITION PLANS
A1.0	FLOOR PLANS
A2.1	EXTERIOR ELEVATIONS
A3.1	WALL SECTIONS
MECHANICAL	
MD1.0	DEMOLITION MECHANICAL PLAN
M1.0	MECHANICAL PLAN
M2.0	SCHEDULES, SYMBOLS LIST, ABBREVIATIONS AND NOTES
ELECTRICAL	
ED1.0	DEMOLITION ELECTRICAL PLAN
E1.0	ELECTRICAL PLAN
E2.0	POWER RISER, SCHEDULE
E3.0	SYMBOLS LIST

CODE INFORMATION

AUTHORITY HAVING JURISDICTION

HARFORD COUNTY PERMITS AND LICENSES (DILP)
220 S. MAIN STREET
BEL AIR, MD 21014

APPLICABLE CODES

BUILDING	2021 INTERNATIONAL BUILDING CODE
LIFE SAFETY	2023 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 101
ACCESSIBILITY	COMAR 09.12.53 / ADA 2010
ENERGY	2021 INTERNATIONAL ENERGY CONSERVATION CODE
PLUMBING	2021 NATIONAL STANDARD PLUMBING CODE
MECHANICAL	2021 INTERNATIONAL MECHANICAL CODE
ELECTRICAL	2023 NATIONAL ELECTRICAL CODE

CODE INFORMATION

USE GROUP (IBC, SECTION 302)	USE: E-EDUCATION
CONSTRUCTION TYPE (IBC, SECTION 601)	TYPE: IIB
AUTOMATIC SPRINKLER SYSTEM (IBC, SECTION 903)	EXISTING MONITORED SPRINKLER SYSTEM
OCCUPANT LOAD (IBC, TABLE 1004)	OCCUPANT LOAD AND MEANS OF EGRESS TO REMAIN UNCHANGED
MINIMUM NUMBER OF EXITS (IBC, TABLE 1006.3.2)	EXISTING TO REMAIN UNCHANGED
EXIT ACCESS TRAVEL DISTANCE (IBC, TABLE 1017.2)	EXISTING TO REMAIN UNCHANGED
AREA OF RENOVATION	~290 SF

STANDARD ABBREVIATIONS

NOTE: ADDITIONAL ABBREVIATIONS USED IN THESE DOCUMENTS ARE IDENTIFIED ON APPLICABLE SHEETS.

A	
ABOVE	ABV
ABOVE FINISH FLOOR	AFF
ACCESSIBLE	ACC
ACOUSTICAL CEILING TILE	ACT
ALTERNATE	ALT
ALUMINUM	ALUM
APPROXIMATE	APPROX
ARCHITECT(URAL)	ARCH
B	
BEARING	BRG
BELOW FINISH FLOOR	BFF
BOARD	BD
BOTTOM OF DECK	BOD
BOTTOM OF FOOTING	BOF
BUILT UP ROOF	BUR
C	
CABINET	CAB
CARPET (ED)	CPT
CEILING	CLG
CENTER	CTR
CENTER LINE	CL
CERAMIC TILE	CT
COLUMN	COL
CONCRETE	CONC
CONCRETE MASONRY UNIT	CMU
CONTINUOUS or CONTINUE	CONT
CONTROL JOINT	CJ
CORRIDOR	CORR
CUBIC FEET	CU FT or CF
CUBIC YARD	CU YD or CY
CYLINDER	CYL
D	
DEMOLITION or DEMOLISH	DEMO
DETAIL	DTL
DIAMETER	DIA
DIMENSION	DIM
DIVISION	DIV
DOUBLE	DBL
DOWN	DN
DOWNSPOUT	DS
DRAWING	DWG
E	
EACH	EA
EACH WAY	EW
ELECTRIC or ELECTRICAL	ELEC
ELEVATION (GRADE)	ELEV
ENTRANCE	ENTR
EQUAL	EQ
EQUIPMENT	EQUIP
EQUIVALENT	EQUIV
EXISTING TO REMAIN	ETR
EXPANSION JOINT	EJ
EXTERIOR	EXT
EXTERIOR INSULATION FINISH SYSTEM	EIFS
F	
FEET OR FOOT	FT
FEMININE NAPKIN DISPOSAL	FND
FINISH FLOOR	FF
FIRE EXTINGUISHER	FE
FLOOR	FLR
FOOTING	FTG
FOUNDATION	FDN
FURNITURE	FURN
G	
GALVANIZED	GALV
GAUGE	GA
GLASS	GL
GRAB BAR	GB
GYPSUM	GYP
GYPSUM WALL BOARD	GWB
H	
HARDWARE	HDW
HEATING/VENTING and AIR CONDITIONING	HVAC
HEIGHT	HT
HOLLOW CORE	HC
HOLLOW METAL	HM
HORIZONTAL	HORIZ
I	
INSIDE DIAMETER	ID
INSULATION	INSUL
INTERIOR	INT
J	
JANITORS CLOSET	JAN
JOINT	JT
K	
KITCHEN	KIT
L	
LAMINATE (D)	LAM
LAVATORY	LAV
LIGHT	LT
LINEAR FEET	LIN FT
LIQUID SOAP DISPENSER	LSD
LONG or LENGTH	L
LOUVER	LVR
M	
MANUFACTURER	MFR
MASONRY OPENING	MO
MATERIAL	MATL
MAXIMUM	MAX
MECHANICAL	MECH
METAL	MTL
MINIMUM	MIN
MIRROR	MIR
MISCELLANEOUS	MISC
MOUNTED	MTD
MECHANICAL, ELECTRICAL and PLUMBING	MEP
N	
NOMINAL	NOM
NOT APPLICABLE	NA
NOT IN CONTRACT	NIC
NOT TO SCALE	NTS
NUMBER	NO or #
O	
ON CENTER	O.C.
OPPOSITE	OPP
OUTSIDE DIAMETER	OD
OVERHEAD	OH
ON CENTER	OS
P	
PAINTED	PTD
PAIR	PR
PLASTIC OR PLASTER	PLAS
PLASTIC LAMINATE	PLAM
PLATE	PL
PLYWOOD	PLYWD
PREENGINEERED	PRE-ENG
PREFABRICATED	PREFAB
PREFINISHD	PREFIN
PRESSURE TREATED	PT
Q	
QUARRY TILE	QT
R	
RAIN LEADER	RL
REFERENCE	REF
REFRIGERATOR	REFR
REINFORCE (ING) (ED)	REINF
REQUIRED	REQ'D
RESILIENT	RES
REVISE	REV
ROOF DRAIN	RD
ROOM	RM
ROUGH OPENING	RO
S	
SANITARY NAPKIN DISPENSER	SND
SCHEDULE	SCHED
SIMILAR	SIM
SOAP DISPENSER	SD
SOLID CORE	SC
SPECIFICATION	SPEC
SPLASH BLOCK	SB
SQUARE	SQ
SQUARE FOOT	SQ FT or SF
SQUARE YARD	SQ YD or SY
STAINLESS STEEL	SS
STANDARD	STD
STEEL	STL
STORAGE	STOR
STRUCTURAL	STRUCT
SUSPEND (ED)	SUSP
SYSTEM	SYS
T	
TO BE DETERMINED	TBD
TOWEL DISPENSER	TD
TELEPHONE	TEL
TELEVISION	TV
THICK	THK
TOILET TISSUE DISPENSER	TTD
TONGUE AND GROOVE	T&G
TOP OF STEEL	TOS
TOP OF FOOTING	TOF
TYPICAL	TYP
U	
UNLESS NOTED OTHERWISE	UNO
V	
VERTICAL	VERT
VINYL BASE	VB
VINYL COMPOSITION TILE	VCT
W	
WATER CLOSET	WC
WATER HEATER	WH
WEIGHT	WT
WELDED WIRE FABRIC	WWF
WITH	W/
WITHOUT	W/O
WOOD	WD
Y	
YARD	YD

VICINITY MAP

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.

William I Starr - MD 20121
PROJECT ARCHITECT
STATE OF REGISTRATION AND REG. NUMBER

10-20-25
EXPIRATION DATE

REVISIONS

REV#	DATE	DESCRIPTION

ARCHITECTS
ENGINEERS
PLANNERS
SURVEYORS
410-838-7900 www.frederickward.com
FREDERICK WARD ASSOCIATES
P.O. Box 727, 5 South Main Street Bel Air, Maryland 21014

CLIENT:
HARFORD COUNTY PUBLIC SCHOOLS
102 SOUTH HICKORY AVE. BEL AIR, MD 21014

COVER SHEET

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

STATE OF MARYLAND · WILLIAM I STARR · REGISTERED ARCHITECT

DATE: 7/10/2024	DRAWING NO: T1.0
SCALE: AS NOTED	
DRAWN BY: AH	
CHECKED BY: WS	FWA JOB NUMBER 2241053.00

BID / PERMIT DRAWINGS

GENERAL DEMOLITION NOTES

A DEMOLITION PLAN IS NOT ALL INCLUSIVE. ADDITIONAL DEMOLITION WORK MAY BE REQUIRED FOR INSTALLING NEW WORK.

B IN AREAS OR ROOMS WHERE ARCHITECTURAL DEMOLITION IS NOT INDICATED AND MPE IS REQUIRED, REMOVE AND REPAIR ANY ITEMS TO ACCOMODATE WORK REQUIRED AND RESTORE AREA TO ORIGINAL CONDITION BEFORE WORK PROCEEDS.

C PROTECT FROM THE ELEMENTS ALL EXISTING CONDITIONS THAT ARE TO REMAIN, AS NECESSARY, DURING DEMOLITION PHASE OF CONSTRUCTION. REPAIR ALL DAMAGE PROMPTLY TO ORIGINAL CONDITION.

D DEMOLITION SHALL INCLUDE ANY REMOVAL OF EXISTING MATERIALS TO MAKE PROVISION FOR NEW FINISHES.

E THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL EXISTING CONDITIONS. THE ARCHITECT IS TO BE NOTIFIED OF ANY DISCREPANCIES AND ANY DISCREPANCIES RECTIFIED BEFORE WORK IS RESUMED.

F ALL STRUCTURAL ITEMS THAT SEEM TO BE SUSPECT FOR REPLACEMENT SHALL BE INSPECTED BY THE PROJECT ARCHITECT TO DETERMINE IF THEY SHOULD BE REPLACED. ALL STRUCTURAL ITEMS THAT ARE DAMAGED AND NEED REPLACING WILL BE TAGGED BY THE STRUCTURAL ENGINEER AND REPLACED BY THE CONTRACTOR BEFORE ANY OTHER WORK BEGINS.

G ALL DEMOLITION WORK SHALL BE EXECUTED IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST POSSIBLE NOISE, DUST AND DISTURBANCE TO THE OWNER.

H THE CONTRACTOR SHALL MAINTAIN AT ALL TIMES ALL EXISTING SMOKE AND FIRE PROTECTION SYSTEMS.

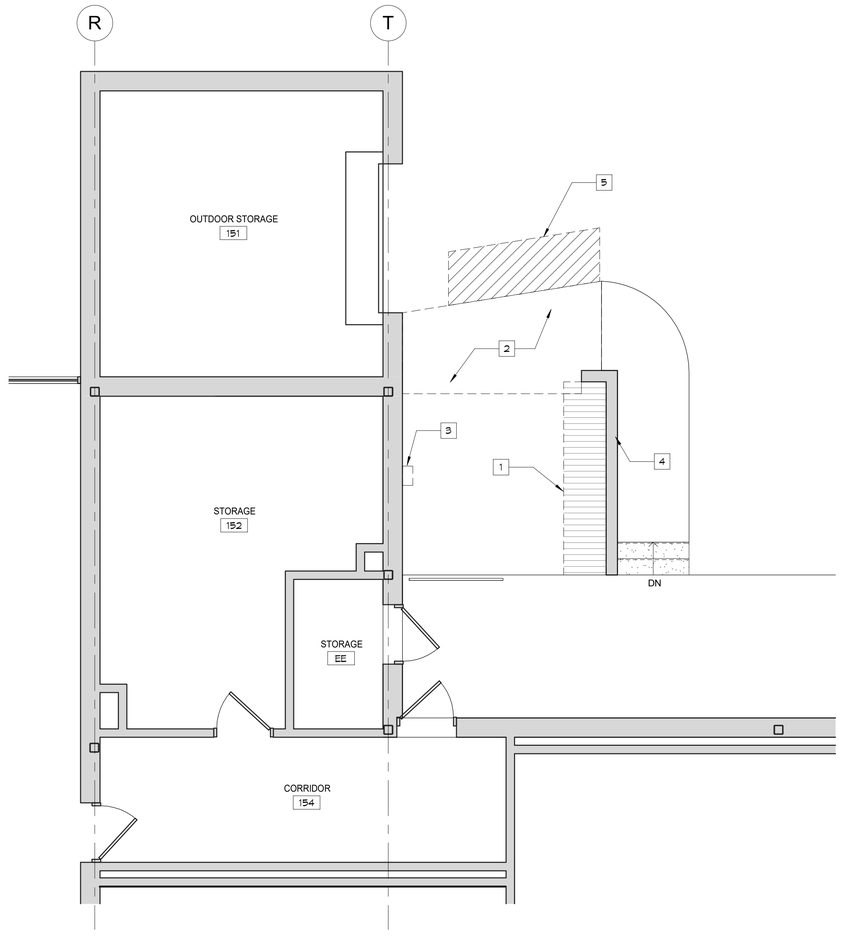
I THE CONTRACTOR SHALL AT ALL TIMES KEEP ALL EXISTING ACCESS/EGRESS FREE AND CLEAR OF DEBRIS.

J OWNER HAS RIGHT OF FIRST REFUSAL ON ANY ITEMS REMOVED OR DEMOLISHED IN PROJECT AREA. AT EXISTING AREAS TO BE RENOVATED, REMOVE EXISTING FINISHES AS REQUIRED TO COMPLETE NEW WORK. PATCH AND REPAIR REMAINING SURFACES AS REQUIRED TO BRING TO A LIKE NEW STATE PRIOR TO APPLYING NEW FINISHES.

KEYNOTES - DEMOLITION

⌀

1 REMOVE EXISTING WOOD PLATFORM/WALKWAY IN ITS ENTIRETY
2 REMOVE EXISTING CONCRETE SIDEWALK (SAW CUT TO THE EXTENT SHOWN ON NEW PLAN AND WALL SECTIONS) AND PREP FOR NEW FOOTING AND STEM WALL.
3 REMOVE EXISTING WALL PACK LIGHT
4 REMOVE EXISTING METAL CAP ON EXISTING BRICK WALL - PREP FOR NEW CAP
5 REMOVE EXISTING ASPHALT ROAD - PATCH AND REPAIR ASPHALT AS REQUIRED TO PERFORM NEW WORK

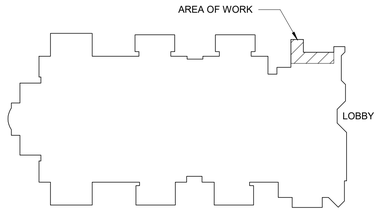


1 AD.1 **FIRST FLOOR - DEMOLITION**
1/4" = 1'-0"

1/4" = 1'-0" SCALE 2 0 2 4 6 8 10 FEET

DEMOLITION PLAN LEGEND

- EXISTING WALL
- DEMO WALL
- EXISTING DOOR
- DEMO DOOR



KEY PLAN
NOT TO SCALE

REVISIONS

REV#	DATE	DESCRIPTION

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HARFORD COUNTY PUBLIC SCHOOLS
102 SOUTH HICKORY AVE. BEL AIR, MD 21014

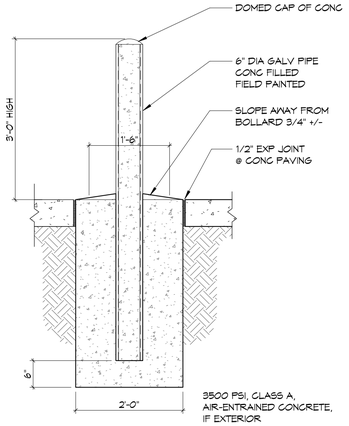
DEMOLITION PLANS

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

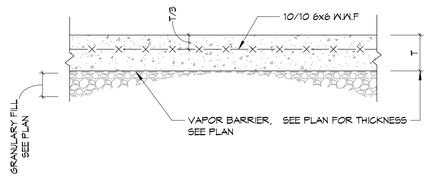
STATE OF MARYLAND · WILLIAM STARR · 002012 · ARCHITECT

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NUMBER: 20121
EXPIRATION DATE: 10-20-25

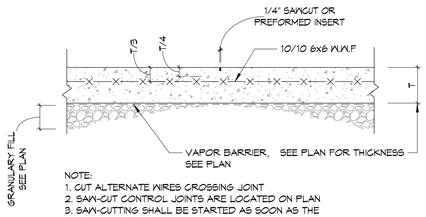
DATE: 7/10/2024	DRAWING NO: AD.1
SCALE: AS NOTED	
DRAWN BY: AH	
CHECKED BY: WIS	FWA JOB NUMBER 2241053.00



3 A1.0 **TYP. BOLLARD** 3/4" = 1'-0"

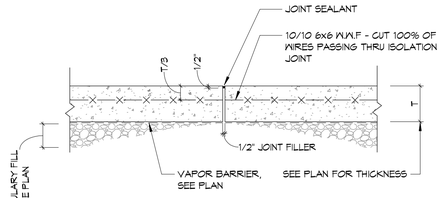


4 A1.0 **TYPICAL SLAB** 3/4" = 1'-0"



NOTE:
1. CUT ALTERNATE WIRES CROSSING JOINT
2. SAW-CUT CONTROL JOINTS ARE LOCATED ON PLAN
3. SAW-CUTTING SHALL BE STARTED AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT AGGREGATE BEING DISLODGED BY THE SAW AND WHEN THE EDGES OF THE CUT DO NOT RAVEL

5 A1.0 **CONTROL JOINT** 3/4" = 1'-0"



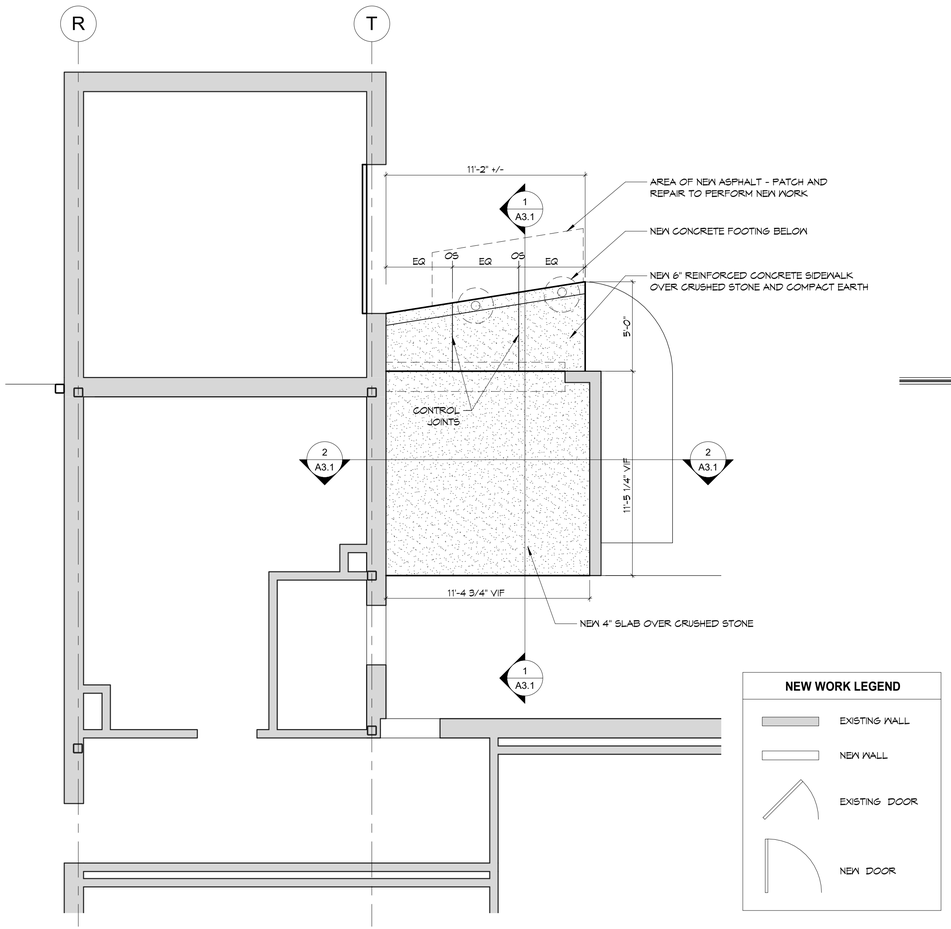
NOTE:
1. ISOLATION JOINT SHALL CARRY THROUGH FULL DEPTH OF BASE SLAB AND TOPPING SLAB (IF REQUIRED).

6 A1.0 **ISOLATION JOINT** 3/4" = 1'-0"

KEYNOTES - NEW WORK

0

1. PROVIDE NEW REINFORCED CONCRETE WALKWAY - ALIGN ELEVATION OF NEW CONCRETE TO ADJACENT EXISTING CONCRETE WALKWAY
2. ALIGN EDGE OF NEW CONCRETE SIDEWALK TO EXISTING DOOR
3. EDGE OF NEW FOUNDATION WALL TO ALIGN WITH EXISTING BRICK WALL
4. NEW 6" STEEL BOLLARD FILLED WITH CONCRETE
5. EXISTING GUARDRAIL TO REMAIN - PREP FOR NEW COAT OF PAINT-COLOR TO MATCH EXISTING
6. NEW CONDENSING UNIT TO BE MOUNTED ON NEW SLAB - SEE MEP DRAWINGS
7. PATCH AND REPAIR ASPHALT AS REQUIRED TO PERFORM NEW WORK
8. SECURITY CAGE: BASIS OF DESIGN PRODUCT = AC SECURITY CAGE CG-U-M AS MANUFACTURED BY DIVERSITECH, INC

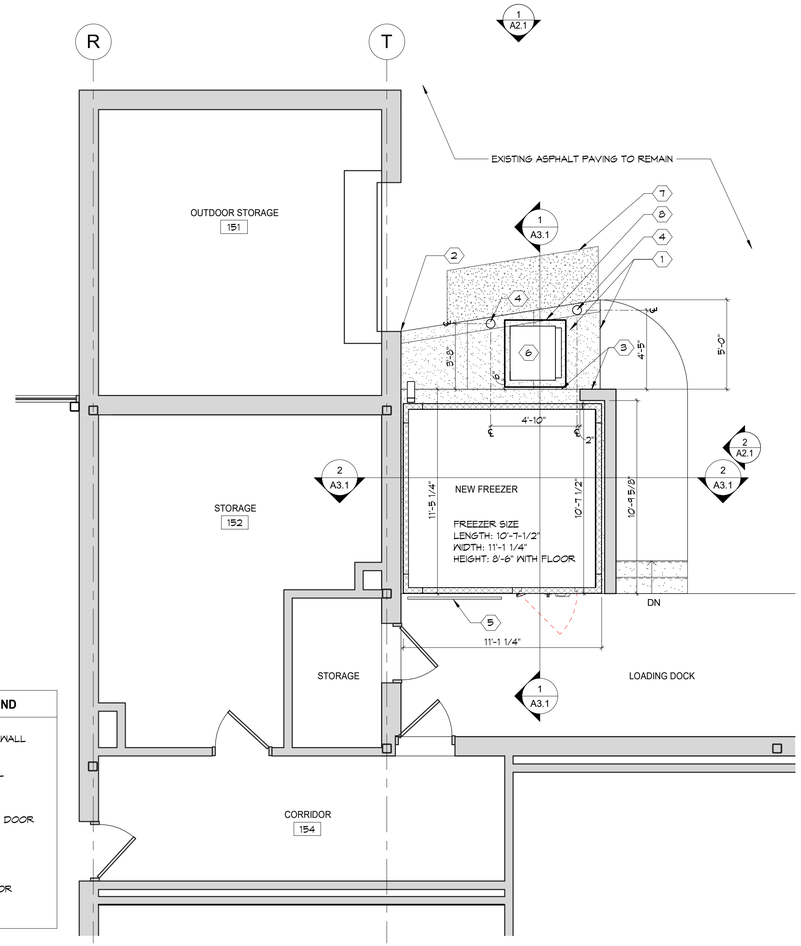


NEW WORK LEGEND

- EXISTING WALL
- NEW WALL
- EXISTING DOOR
- NEW DOOR

2 A1.0 **ARCHITECTURAL SLAB PLAN** 1/4" = 1'-0"

1/4" = 1'-0" SCALE 2 0 2 4 6 8 10 FEET



1 A1.0 **FIRST FLOOR - NEW WORK** 1/4" = 1'-0"

1/4" = 1'-0" SCALE 2 0 2 4 6 8 10 FEET

GENERAL CONSTRUCTION NOTES

A CONTRACTOR AND ANY SUB-CONTRACTOR HAVING SUBMITTED A PROPOSAL FOR THIS WORK SHALL BE HELD AS HAVING CLEAR AND COMPLETE UNDERSTANDING OF REQUIREMENTS FOR THEIR WORK UNDER THE CONTRACT. THIS IS TO INCLUDE, BUT NOT LIMITED TO, SITE/CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, INFORMATION TECHNOLOGY, ETC., SO AS TO AVOID COORDINATION ERRORS, OMISSIONS AND MISINTERPRETATIONS. NO ADDITIONAL COMPENSATION WILL BE AUTHORIZED FOR ALLEGED ERRORS, OMISSIONS AND MISINTERPRETATIONS, WHETHER THEY ARE A RESULT OF A FAILURE TO OBSERVE THESE REQUIREMENTS OR NOT. CONTRACTOR IS ALSO REQUIRED TO COORDINATE WITH ANY OWNER SUPPLIED EQUIPMENT REQUIREMENTS.

B WHERE DISCREPANCIES EXIST BETWEEN VARIOUS DRAWINGS, THE CONTRACTOR WILL CONTACT ARCHITECT AND OWNER IN WRITING BEFORE PROCEEDING. THE CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING ANY REASONABLE INTERPRETATION AT NO ADDITIONAL COST TO THE OWNER.

C CONTRACTORS ARE RESPONSIBLE AND LIABLE FOR SAFETY AND PROTECTION OF SITE, PROJECT, WORKMEN, SUB-CONTRACTORS, THE PUBLIC AND PUBLIC PROPERTY AGAINST INJURY OR DAMAGE OF ANY TYPE, FROM ANY CAUSE, UNTIL FINAL ACCEPTANCE OF THE PROJECT. CONTRACTOR SHALL CARRY INSURANCE TO FULLY PROTECT THEIR INTERESTS AND THOSE OF THE OWNER.

D ALL WORK SHALL CONFORM TO LOCAL BUILDING CODES AND REGULATIONS AND SHALL BE INSTALLED ACCORDING TO THE JOINT REQUIREMENTS AND DECISIONS OF ALL LOCAL AUTHORITIES. IF ANY CONTRACTOR OR SUBCONTRACTOR PERFORMS ANY WORK CONTRARY TO THE LOCAL BUILDING CODE AND ORDINANCES, RULES AND REGULATIONS, THEY SHALL BEAR ALL COSTS ARISING THEREFROM.

E COORDINATE AND SCHEDULE WORK WITH THE OWNER TO ACCOMMODATE THE OWNER'S NORMAL ACTIVITIES AND TO MAINTAIN THE SAFETY OF THE OWNER'S PROPERTY, STAFF AND OTHERS USING THE SITE.

F CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE BEFORE STARTING THE WORK. DIMENSIONS SHOWN ARE FROM FACE OF FINISH OR FACE OF MASONRY WALL UNLESS OTHERWISE NOTED. EXISTING WALLS ARE DIMENSIONED FACE OF FINISH TO FACE OF FINISH ±.

G NOT EVERY CONDITION IS DETAILED. WHERE SPECIFIC DETAILING IS NOT SHOWN, EXECUTE THE CONSTRUCTION IN A SOUND, WORKMANLIKE MANNER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED INSTALLATION METHODS & PROCEDURES.

H ADJACENT BUILDING SPACES NOT IN THE PROJECT AREA SHALL BE KEPT CLEAN AND PROTECTED. REMOVAL OF ALL EXISTING CONSTRUCTION, MECHANICAL AND ELECTRICAL EQUIPMENT AND FIXTURES SHALL BE EXECUTED IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST POSSIBLE DISTURBANCE OF ADJOINING AREAS. ALL EXISTING WORK DISTURBED OR DAMAGED BY THE PROCESS OF DEMOLITION AND NEW CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER. EVERY MEANS SHALL BE USED BY EACH TRADE TO PROTECT THE WORK AND MATERIALS OF ALL OTHERS. IN THE EVENT OF DAMAGE, IMMEDIATE REPAIRS AND REPLACEMENTS SHALL BE MADE TO THE SATISFACTION OF THE ARCHITECT.

I DUST RESULTING FROM THE WORK SHALL BE CONTROLLED TO PREVENT THE SPREAD OF DUST TO THE OTHER PORTIONS OF THE BUILDING. THE USE OF WATER WILL NOT BE PERMITTED. PROVIDE DROP CLOTHS, DUST CURTAINS OR OTHER SUITABLE BARRIERS TO PREVENT THE DUST TRAVELING TO OTHER PORTIONS OF THE BUILDING. SEAL OFF ALL RETURN AIR REGISTERS AND OTHER MECHANICAL SYSTEMS TO PREVENT DUST FROM ENTERING SUCH SYSTEMS. IN ALL AREAS WHERE CONSTRUCTION DIRT AND/OR DUST IS PRODUCED AS A RESULT OF THE WORK, SHALL BE VACUUMED AND/ OR DAMP MOPPED WITH APPROPRIATE EQUIPMENT.

J MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE, DEBRIS, AND RUBBISH. AT COMPLETION OF THE WORK REMOVE ALL WASTE MATERIALS, TOOLS AND CONSTRUCTION EQUIPMENT, LEAVING THE AREA CLEAN AND READY FOR NEW OCCUPANCY.

K MAINTAIN THE BUILDING IN A WATERTIGHT CONDITION AT ALL TIMES.

L WHERE A RATING HAS BEEN GIVEN TO AN EXISTING WALL, SEAL AND FIREPROOF ALL PENETRATIONS (EXISTING OR NEW) PER THAT RATING.

M THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTION, AND/OR MISALIGNMENT IN ACCORDANCE WITH APPLICABLE CODE STANDARDS AND GOOD PRACTICE. THE GENERAL CONTRACTOR SHALL BE SOLELY AND EXCLUSIVELY RESPONSIBLE FOR THE ADEQUACY OF ALL SHORING AND BRACING. THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION SHORING AND BRACING OF ALL STRUCTURAL WORK AS REQUIRED FOR THE STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER OF ANY CONDITION IN WHICH, IN THEIR OPINION, MIGHT ENDANGER THE STABILITY OF THE STRUCTURE OR CAUSE DISTRESS IN THE STRUCTURE.

N CONTRACTOR TO COORDINATE BLOCKING REQUIREMENTS FOR ALL WALL MOUNTED EQUIPMENT AND ACCESSORIES.

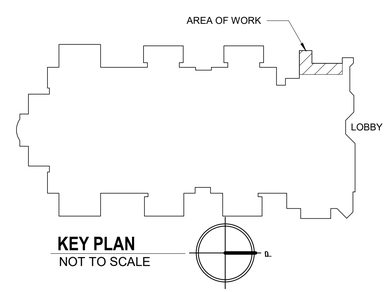
O ALL DOOR JAMBS IN METAL STUD PARTITIONS ARE SET 4" OFF THE ADJACENT WALL UNLESS NOTED OR SHOWN OTHERWISE.

P AT CMU WALLS SHOWN TO BE RATED, NO PENETRATIONS INTO THE FACE OF THE CMU WILL BE ALLOWED. ITEMS SHOULD BE FULLY PLACED WITHIN FURRED SPACE WHERE APPLICABLE OR SURFACE MOUNTED.

Q ANY STRAIGHT RUN OF UN-INTERRUPTED WALL (NOT INTERSECTED BY A PERPENDICULAR WALL) THAT DOES NOT EXTEND TO THE DECK/FRAMING ABOVE SHALL BE BRACED TO THE ROOF/FLOOR SYSTEM BY MATERIAL TO MATCH THE WALL FRAMING. BRACING SHALL BE SPACED AT A MINIMUM OF 4'-0" O/C AND SHOULD ALTERNATE FROM SIDE TO SIDE OF THE WALL.

R PROVIDE SOUND BATT INSULATION AT CORRIDOR WALLS SHARED BY TOILET ROOMS.

S RATED WALLS AND SMOKE COMPARTMENT WALLS TO EXTEND TO UNDERSIDE OF ROOF/FLOOR ABOVE.



KEY PLAN
NOT TO SCALE

REVISIONS

REV#	DATE	DESCRIPTION

ARCHITECTS
ENGINEERS
PLANNERS
SURVEYORS
410-838-7800 www.frederickward.com
FREDERICK WARD ASSOCIATES
P.O. Box 727, 5 South Main Street Bel Air Maryland 21014

CLIENT:
HARFORD COUNTY PUBLIC SCHOOLS
102 SOUTH HICKORY AVE. BEL AIR, MD 21014

FLOOR PLANS

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

STATE OF MARYLAND · WILLIAM STARR · 20121 · ARCHITECT

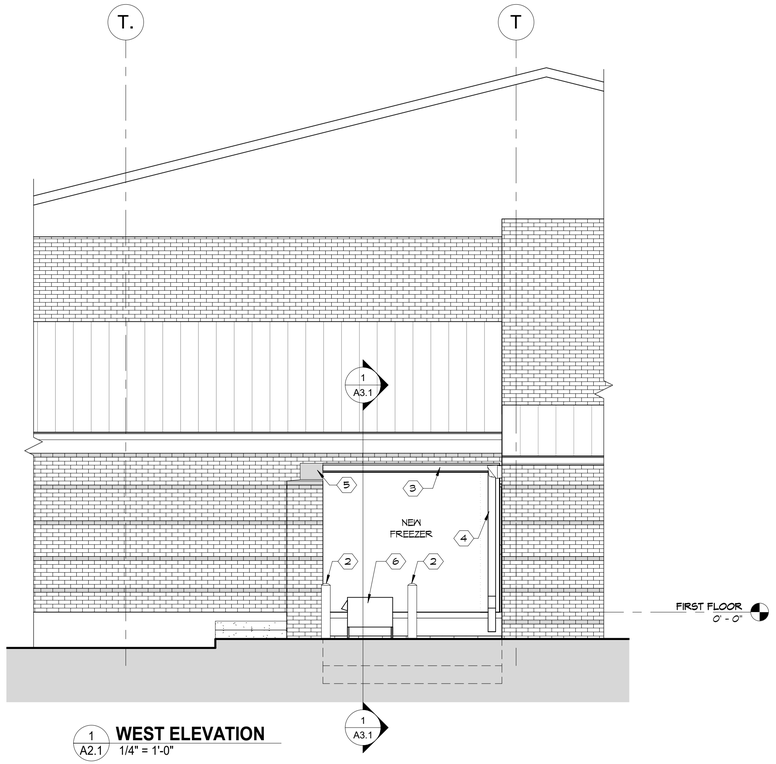
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NUMBER: 20121
EXPIRATION DATE: 10-20-25

DATE: 7/10/2024	DRAWING NO: A1.0
SCALE: AS NOTED	
DRAWN BY: AH	
CHECKED BY: WIS	FWA JOB NUMBER 2241053.00

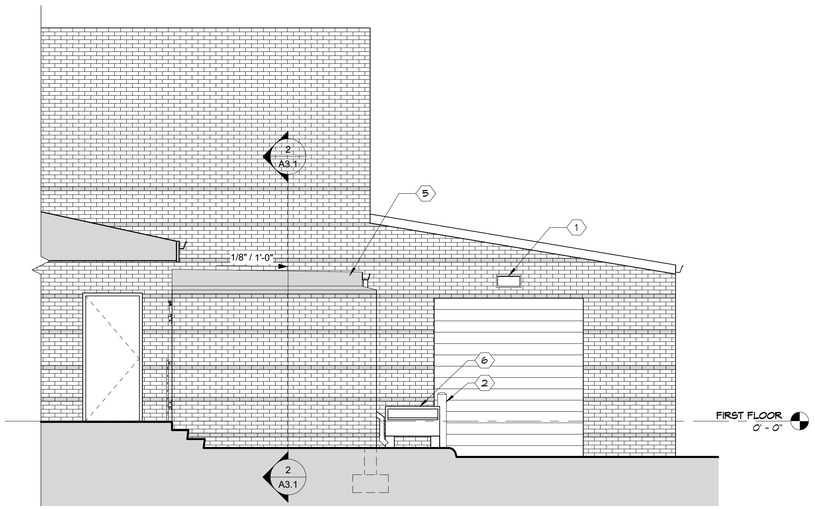
BID / PERMIT DRAWINGS

KEYNOTES - NEW - ELEVATIONS

0
1 NEW WALL PACK - SEE MEP
2 NEW 6" BOLLARDS FILLED WITH CONCRETE
3 GUTTER PROVIDED BY FREEZER MANUFACTURER
4 PROVIDE ALUMINUM DOWNSPOUT
5 NEW FREEZER FLASHING
6 NEW CONDENSING UNIT ATTACHED TO NEW CONCRETE SLAB - PROVIDE SECURITY CAGE OVER NEW CONDENSING UNIT



1 A2.1 **WEST ELEVATION**
1/4" = 1'-0"



2 A2.1 **SOUTH ELEVATION**
1/4" = 1'-0"

REVISIONS

REV#	DATE	DESCRIPTION

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ARCHITECTS
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102 SOUTH HICKORY AVE. BEL AIR, MD 21014

EXTERIOR ELEVATIONS

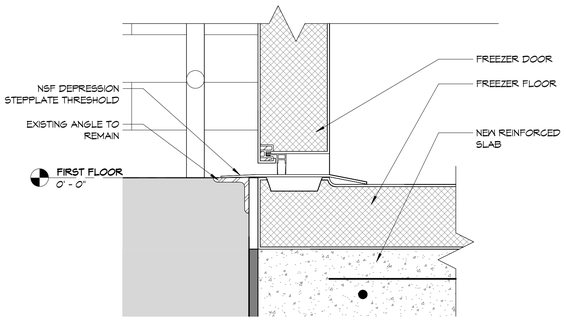
NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

STATE OF MARYLAND
WILLIAM STARK
No. 00201
ARCHITECT

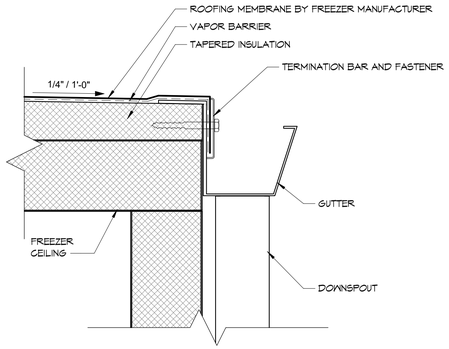
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NUMBER: 20121
EXPIRATION DATE: 10-20-25

DATE: 7/10/2024	DRAWING NO: A2.1
SCALE: AS NOTED	
DRAWN BY: AH	
CHECKED BY: WIS	FWA JOB NUMBER 2241053.00

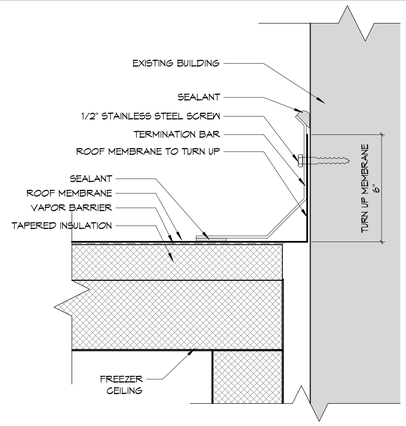
BID / PERMIT DRAWINGS



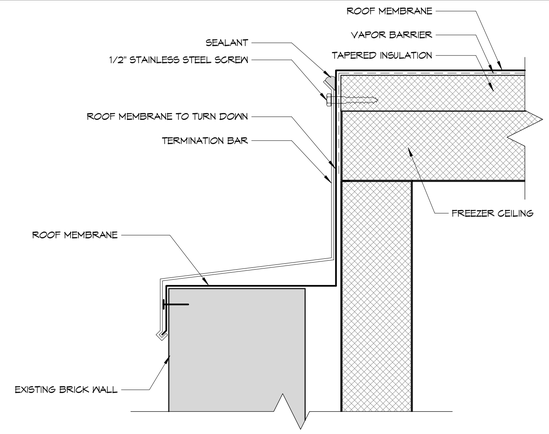
3 A3.1 **THRESHOLD DETAIL**
3" = 1'-0"



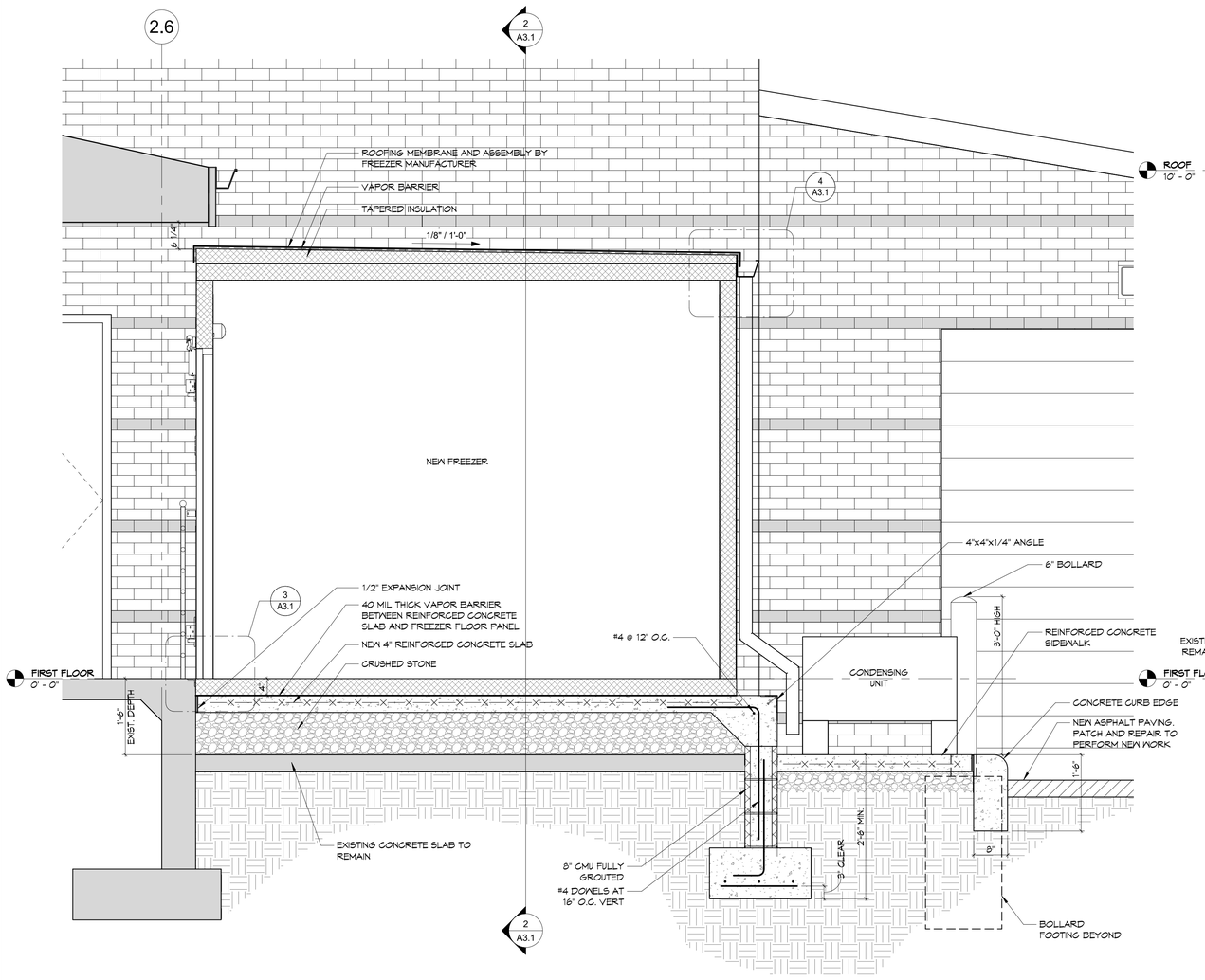
4 A3.1 **ROOF EDGE TERMINATION**
3" = 1'-0"



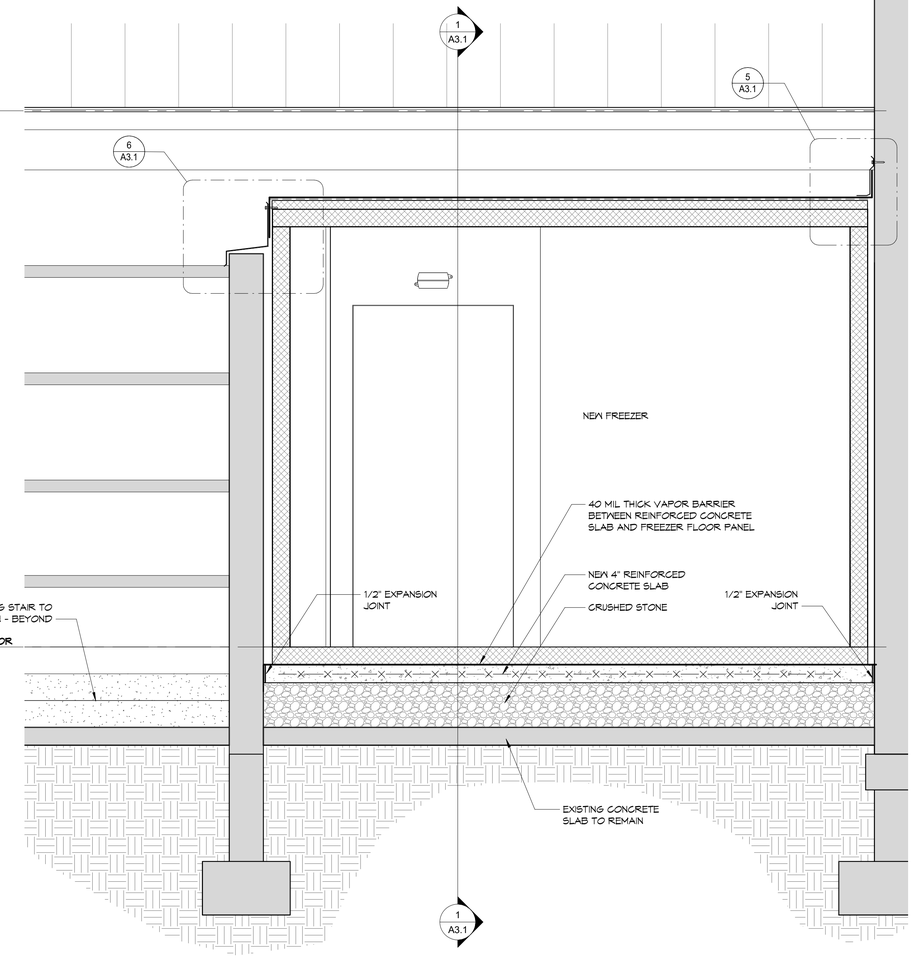
5 A3.1 **EXISTING WALL TERMINATION BAR**
3" = 1'-0"



6 A3.1 **EXISTING WALL AND FREEZER FLASHING**
3" = 1'-0"



1 A3.1 **FREEZER SECTION**
3/4" = 1'-0"



2 A3.1 **FREEZER SECTION @ EXISTING WALL**
3/4" = 1'-0"

REVISIONS

REV#	DATE	DESCRIPTION

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CLIENT:
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102 SOUTH HICKORY AVE. BEL AIR, MD 21014

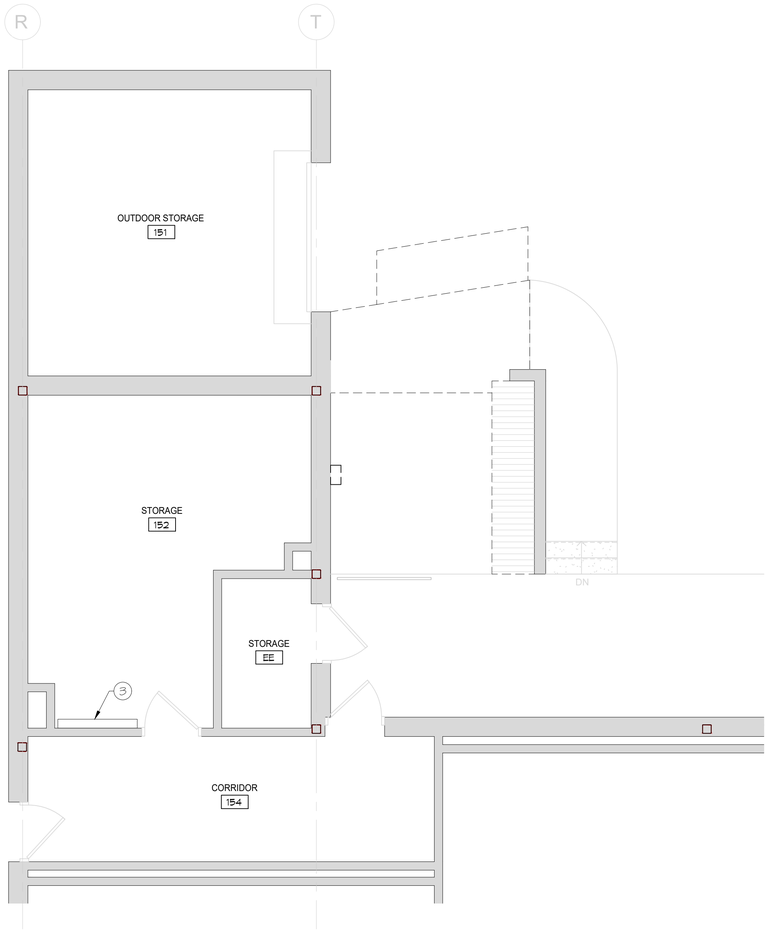
WALL SECTIONS

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

STATE OF MARYLAND
WILLIAM I. STARR
20121
ARCHITECT

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NUMBER: 20121
EXPIRATION DATE: 10-20-25

DATE: 7/10/2024	DRAWING NO: A3.1
SCALE: AS NOTED	
DRAWN BY: AH	
CHECKED BY: WIS	FWA JOB NUMBER 2241053.00

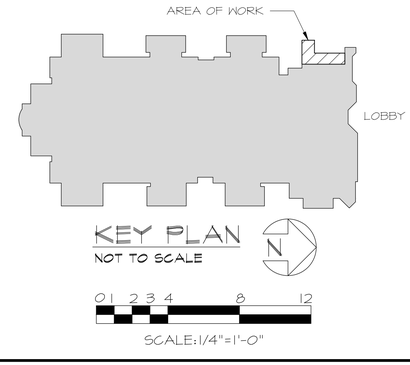


1 2 DEMOLITION MECHANICAL PLAN

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

DRAWING NOTES

1. ALL EXISTING HVAC EQUIPMENT, DUCTWORK, AND ASSOCIATED DEVICES SHALL REMAIN UNLESS OTHERWISE NOTED.
2. FOR ALL EQUIPMENT TO BE REUSED, CONTRACTOR SHALL CLEAN, INSPECT, SERVICE, AND REPAIR AS NECESSARY TO MAKE READY FOR REUSE.
3. JOHNSON METASYS NCM PANEL TO REMAIN. SHOWN FOR COORDINATION AND INFORMATION ONLY.



I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, TIMOTHY SMIDT, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21585, EXPIRATION DATE: MAY 8, 2025.

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www.tel-eng.com

DATE: 7/10/2024
SCALE: AS NOTED
DRAWN BY: MWH
CHECKED BY: DTF
DRAWING NO: MD1.0
TEI JOB NUMBER: 24043

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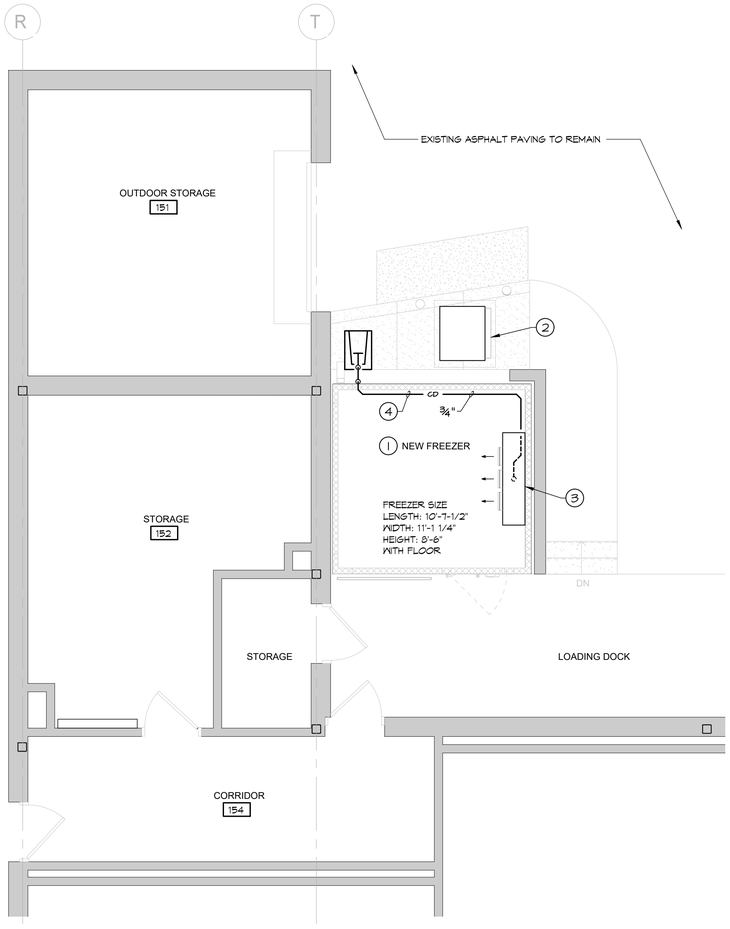
DEMOLITION MECHANICAL PLAN

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017



MECHANICAL PLAN

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

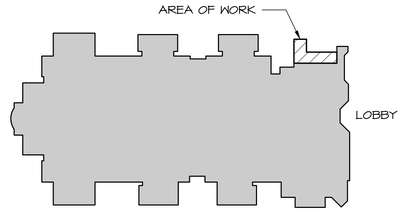
DRAWING NOTES

1. NEW WALK-IN FREEZER TO BE PROVIDED AND INSTALLED BY OTHERS.
2. CONDENSING UNIT (ON GRADE) SERVING WALK-IN FREEZER TO BE PROVIDED AND INSTALLED BY OTHERS.
3. LOW PROFILE EVAPORATOR SERVING WALK-IN FREEZER TO BE PROVIDED AND INSTALLED BY OTHERS.
4. PROVIDE CONDENSATE PIPING AS SHOWN. UNLESS OTHERWISE NOTED CONDENSATE PIPING SHALL BE SLOPED AT 1/4"/LF. EXTEND THROUGH WALL OF FREEZER TO SPLASH BLOCK, TERMINATE WITH 90° ELBOW WITH SCREEN TO DRIP TO SPLASH BLOCK. SEAL PENETRATION OF FREEZER WALL WEATHER TIGHT.

GENERAL NOTES - REFRIGERATION

A. REFRIGERATION EQUIPMENT BASED ON INFORMATION PROVIDED BY: BALLY REFRIGERATED BOXES, INCORPORATED - PROJECT #32291 REFERENCE JOB NAME: CHURCH CREEK - HARFORD COUNTY SCHOOL. (BALLYREFBOXES.COM) - SALES REP: ROB EIFERT 252-240-5420.

B. REFER TO MANUFACTURER'S DRAWINGS, PROVIDED BY BALLY, FOR ASSEMBLY / INSTALL INSTRUCTIONS SPECIFIC TO THIS PROJECT.



KEY PLAN

NOT TO SCALE

N

0 1 2 3 4 8 12

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

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, TIMOTHY SMIDT, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21585, EXPIRATION DATE: MAY 8, 2025.

STATE OF MARYLAND · TIMOTHY FRANCIS SMIDT · 21585 · REGISTERED · PROFESSIONAL ENGINEER

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MECHANICAL PLAN

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

GENERAL NOTES

1. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH LOCAL CODES AND LANDLORD'S LEASING SPECIFICATION AND DRAWINGS.
2. MECHANICAL CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS.
3. ALL EQUIPMENT SHALL BE LISTED BY AN APPROVED AND RECOGNIZED TESTING AGENCY SUCH AS UL, FM, OR ETL.
4. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH LOCAL CODES, THE INTERNATIONAL MECHANICAL CODE (IMC), THE INTERNATIONAL PLUMBING CODE (IPC), THE PROJECT SPECIFICATIONS AND DRAWINGS.
5. EXISTING CONDITIONS AS SHOWN ON PLANS WERE OBTAINED FROM ORIGINAL BUILDING DRAWINGS AND "SPOT-VERIFIED" DURING FIELD SURVEY. CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL ACTUAL CONDITIONS, MAKING NOTE OF ANY DEVIATIONS FROM THESE PLANS. WHERE DEVIATIONS AFFECT INSTALLATION OF NEW WORK AS SHOWN HEREIN, CONTRACTOR SHALL CONSULT WITH THE ENGINEER BEFORE PROCEEDING.
6. EXISTING CONDITIONS CLARIFICATION: ALL EXISTING CONDITION FLOOR PLANS, EXISTING EQUIPMENT/DEVICE LOCATIONS AND SIZES, ETC. SHOWN ON THE CONTRACT DOCUMENTS INDICATE EXISTING CONDITIONS AS KNOWN. THE EXISTING CONDITIONS ARE NOT INTENDED TO BE "AS BUILT" AND MAY DIFFER FROM THOSE SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL EXISTING CONDITIONS, PARTICULARLY WHERE THEY MAY IMPACT THE PROPOSED WORK, PRIOR TO STARTING CONSTRUCTION. MINOR VARIATIONS CAN BE EXPECTED. ANY REQUIRED DEVIATION FROM THE CONTRACT DOCUMENTS AS A RESULT OF DIFFERING SITE CONDITIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS. EXISTING CONDITIONS HAVE BEEN OBTAINED FROM RECENT FIELD SURVEY.
8. NO EQUIPMENT SHALL BE ABANDONED ABOVE THE CEILING. ALL EQUIPMENT WHICH IS DISCONNECTED AND NO LONGER IN USE SHALL BE REMOVED BACK TO THE NEAREST ACTIVE MAIN, AND THERE CAPPED AND SEALED.
9. ALL EQUIPMENT SHALL BE INSTALLED AND SERVICE CLEARANCES MAINTAINED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS.
10. CONTRACTOR SHALL OBTAIN APPROVED SHOP DRAWINGS FOR ALL EQUIPMENT PRIOR TO INSTALLING ON THE JOB. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COMMENTS ON SHOP DRAWINGS.
11. UPON COMPLETION OF THE MECHANICAL INSTALLATIONS, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER ONE COMPLETE SET OF PRINTS OF THE MECHANICAL CONTRACT DRAWINGS WHICH SHALL BE LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES AND DEPARTURES OF THE INSTALLATION AS COMPARED WITH THE ORIGINAL DESIGN. THEY SHALL BE SUITABLE FOR USE IN PREPARATION OF RECORD DRAWINGS.
12. CLARIFICATION: IF THE CONTRACT DOCUMENTS ARE FOUND TO BE UNCLEAR, AMBIGUOUS, OR CONTRADICTORY, THE CONTRACTOR MUST REQUEST CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH THAT PART OF THE WORK.
13. THE ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT IN ACCORDANCE WITH THE INTENT OF THESE DRAWINGS.
14. MECHANICAL CONTRACTOR SHALL VERIFY ALL VOLTAGES OF MECHANICAL EQUIPMENT WITH ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN AND ORDERING EQUIPMENT.
15. CLARIFICATION OF DRAWINGS: SHOULD A BIDDER FIND DISCREPANCIES IN OR OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, OR SHOULD HE BE IN DOUBT WITH REGARD TO THEIR INTENT, HE SHALL NOTIFY THE ENGINEER BEFORE SUBMITTING HIS BID PROPOSAL. THE ENGINEER SHALL THEN SEND WRITTEN INSTRUCTIONS TO ALL BIDDERS. ORAL INSTRUCTIONS SHALL NOT BE BINDING TO EITHER THE ENGINEER OR OWNER. IF THIS CONTRACTOR FAILS TO COMPLY WITH THIS REQUIREMENT, HE SHALL ACCEPT THE ENGINEER'S INTERPRETATION REGARDING THE INTENT OF THE CONTRACT DOCUMENTS.

SYMBOLS LIST & ABBREVIATIONS

——CD——	CONDENSATE DRAIN PIPE (CD)
——o	PIPE DOWN
o——	PIPE UP
1Φ	SINGLE PHASE
AFF	ABOVE FINISHED FLOOR
CAP.	CAPACITY
CONN.	CONNECTION
DIA	DIAMETER
I.n.	INCH
TYP	TYPICAL

INSULATION SCHEDULE

SERVICE	FLUID TEMP. RANGE (°F)	CONDENSATION CONTROL	INSULATION TYPE	THICKNESS (IN.)	DENSITY (LB/CU. FT.)	K-FACTOR (BTU-IN/HR-FT2-°F)	RECOMMENDED MANUFACTURER
CONDENSATE DRAIN	50-60	YES	ONE PIECE MOLDED FIBERGLASS	1	-	0.23 @ 75°F MEAN	KNAUF

NOTES
1. PIPE INSULATION THICKNESS APPLIES TO PIPE SIZES UP TO 6" IN DIAMETER.
2. PIPE INSULATION SHALL MEET REQUIREMENTS OF THE LATEST IECC ENERGY CODE.

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SCHEDULES, SYMBOLS LIST, ABBREVIATIONS AND NOTES

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

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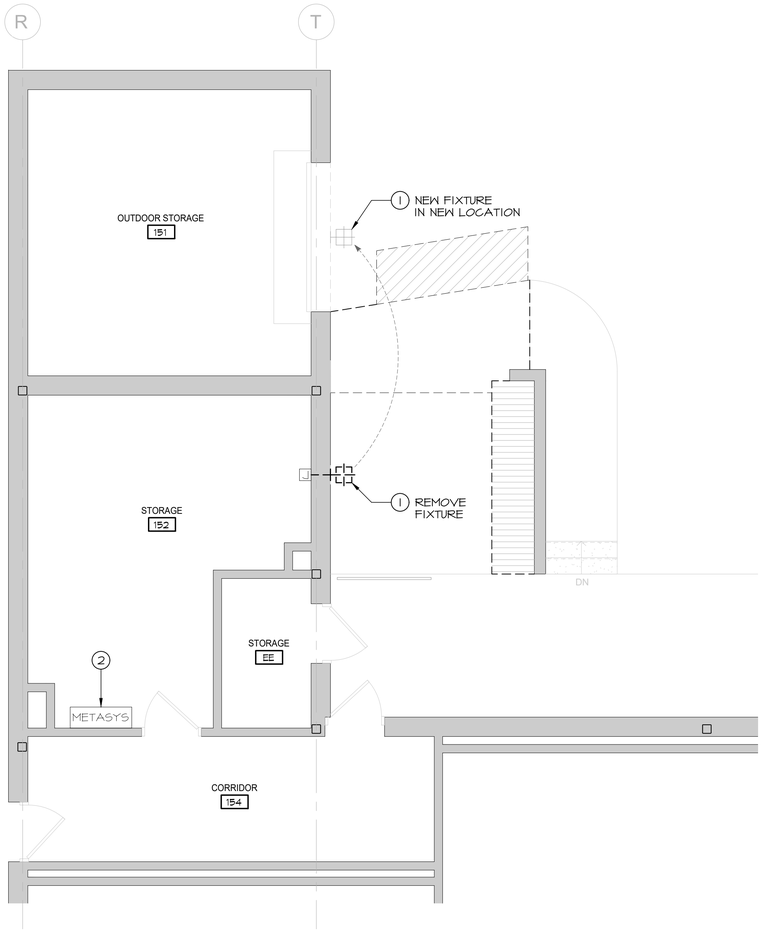
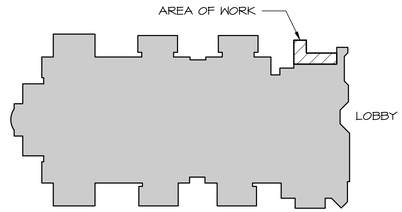


DEMOLITION ELECTRICAL PLAN

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

DRAWING NOTES

1. REPLACE EXTERIOR WALL MOUNTED LIGHT FIXTURE. NEW LOCATION REQUIRED TO ACCOMMODATE NEW FREEZER UNIT INSTALLATION. REFER TO LIGHTING PLAN ON SHEET E1.0.
2. JOHNSON METASYS ZONE CONTROL PANEL LOCATION SHOWN FOR REFERENCE. VERIFY IN FIELD. PROPOSED WALK-IN FREEZER SHALL BE CONNECTED TO BUILDING AUTOMATION (BY OTHERS). HCPS FACILITIES CONTACT 410-638-4088 (JUSTIN EVANS).



KEY PLAN

NOT TO SCALE

N

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DATE: 7/10/2024
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DRAWN BY: KWN
CHECKED BY: TJS
DRAWING NO: ED1.0
TEI JOB NUMBER: 24043

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DEMOLITION ELECTRICAL PLAN

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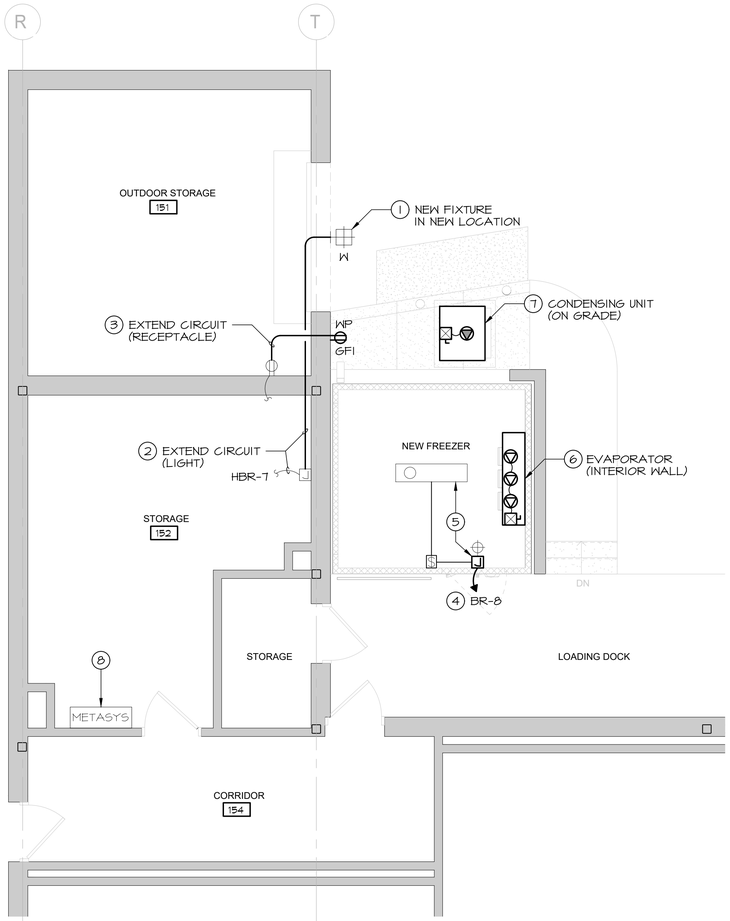

ELECTRICAL PLAN

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

* LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	MOUNTING	DESCRIPTION/VOLTAGE	CATALOG NO.
W	LED 4000°K 22 WATTS	WALL SURFACE	EXTERIOR LED WALL PACK WITH DARK BRONZE HOUSING AND TYPE IV (4) DISTRIBUTION (2TTV) LUMENS 2,000	CURRENT LIGHTING EXO LNC-9L-U-4K-4-DBT-PCU

DRAWING NOTES

1. NEW LIGHT FIXTURE, IN NEW LOCATION REQUIRED TO ACCOMMODATE FREEZER UNIT INSTALLATION. REFER TO SCHEDULE ON THIS SHEET.
2. EXTEND EXISTING CIRCUIT WIRING PREVIOUSLY SERVING EXTERIOR WALL PACK LIGHTING CONDITION (PANEL HBR #7 - VERIFY IN FIELD).
3. EXTEND EXISTING CIRCUIT WIRING, CURRENTLY SERVING STORAGE AREA, TO PROPOSED EXTERIOR SERVICE RECEPTACLE AS REQUIRED. TRACE AND VERIFY CIRCUIT IN THE FIELD.
4. EXTEND 120V CIRCUIT, FROM PREFABRICATED JUNCTION AT DOOR INTERIOR, FOR FREEZER UNIT LIGHTING, TEMPERATURE PROBE AND DOOR FRAME HEATER.
5. INTERIOR LIGHT FIXTURES AND CONTROL SWITCH ARE ACCESSORIES PROVIDED WITH UNIT SHIPMENT. ELECTRICAL CONTRACTOR SHALL MAKE ALL CONNECTIONS TO COMPLETE LIGHTING SYSTEM.
6. PROPOSED EVAPORATOR UNIT (INTERIOR WALL MOUNT). FIELD COORDINATE FINAL LOCATION AND EXTEND WIRING AS REQUIRED. REFER TO REFRIGERATION EQUIPMENT SCHEDULE ON THIS SHEET.
7. PROPOSED CONDENSING UNIT (EXTERIOR GRADE). FIELD COORDINATE FINAL LOCATION AND EXTEND WIRING AS REQUIRED. REFER TO REFRIGERATION EQUIPMENT SCHEDULE ON THIS SHEET.
8. JOHNSON METASYS ZONE CONTROL PANEL LOCATION SHOWN FOR REFERENCE. VERIFY IN FIELD. PROPOSED WALK-IN FREEZER SHALL BE CONNECTED TO BUILDING AUTOMATION (BY OTHERS). HCPS FACILITIES CONTACT 410-638-4088 (JUSTIN EVANS).

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B. REFER TO MANUFACTURER'S DRAWINGS, PROVIDED BY BALLY, FOR ASSEMBLY / INSTALLATION INSTRUCTIONS SPECIFIC TO THIS PROJECT.

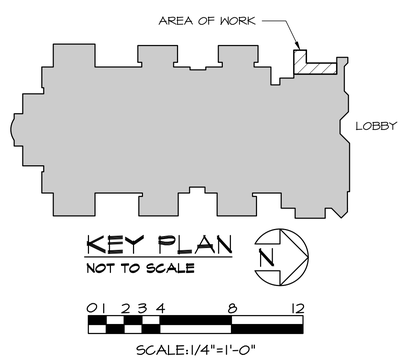
C. PROPOSED WALK-IN FREEZER IS A PREFABRICATED, MODULAR SYSTEM, TO BE ASSEMBLED ON SITE BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL COORDINATE AND MAKE ALL WIRING CONNECTIONS TO STRUCTURE AND ASSOCIATED COMPONENTS (LIGHTS, EVAPORATOR, CONDENSING UNIT) AS REQUIRED FOR FULLY FUNCTIONING UNIT.

D. PENETRATIONS THROUGH MODULAR PANELS REQUIRE PROPER PERAGUM SEALANT ON INTERIOR AND EXTERIOR. USE SEAL-OFF FITTING INTO ENTRANCE DOOR JUNCTION BOX TO PREVENT CONDENSATION. REFER TO MANUFACTURER'S DRAWINGS FOR MORE INFORMATION / DETAILS.

REFRIGERATION EQUIPMENT SCHEDULE

EQUIP.	VOLTAGE/ Φ	LOAD	PANEL - CIRCUIT #	BKR SIZE	WIRE	CDT	EQUIP. DISC. TYPE	RMKS
EVAPORATOR	208V/1Φ	16.8 A	BR-7,9	20	2#12AWG+#12GRD	3/4"	INTEGRAL	DEFROST
COND. UNIT	480V/3Φ	8 A	HBR-37,39,41	20	3#12AWG+#12GRD	3/4"	INTEGRAL	-

COORDINATE FINAL SELECTED EQUIPMENT AND REQUIRED ELECTRICAL CONNECTIONS IN THE FIELD WITH SUPPLIED REFRIGERATION UNITS.



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ELECTRICAL PLAN

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BID / PERMIT DRAWINGS

EXISTING BOILER ROOM

* PANEL BR (1)

10k AIC

120 / 208 VOLTS | 3 Φ | 4 WIRE | 50 AMP | MAIN CIRCUIT BRKR

DESCRIPTION	KVA	CB	CKT	CKT	CB	KVA	DESCRIPTION
-	-	-	1	2			
-	-	-	3	4	50	-	MAIN
-	-	-	5	6			
(2) WALK-IN FREEZER (EXTERIOR) EVAPORATOR / DEFROST	3.49	20	7	8	20	.15	WALK-IN FREEZER - LIGHTS (2)
			9	10	20	.30	WALK-IN FREEZER - LIGHTS
MECHANICAL RM - RECP	.18	20	11	12	20	.54	MECH / ELECT RM - RECPS
BOILER CONTROL CIRCUIT	.20	20	13	14	20	.20	BOILER CONTROL CIRCUIT
JOHNSON NCE		20	15	16	20	.20	BOILER CONTROL CIRCUIT
DHAC #4 H.W. CIRCULATOR #1	.48	20	17	18	20	.35	PRIMING TRAP CIRCUIT
DHAC #5 H.W. CIRCULATOR #2	.48	15	19	20	15	.20	WATER HEATER CONTROL CIRC
			21	22			
BOILER BLOWER MOTOR #1	.25	20	23	24	-	20.00	SPARE
			25	26			
			27	28			
BOILER BLOWER MOTOR #2	.25	20	29	30	-	21.00	SPARE
			31	32			
SPARE	-	20	33	34	20	.15	LIGHTING CONTACTOR
WALK-IN FREEZER	2.85	20	35	36	50	-	SPARE (TRAILOR RECEPTACLE ABANDONED)
			37	38			
WALK-IN COOLER	2.35	20	39	40	20	.30	WALK-IN COOLER - LIGHTS
			41	42	20		WALK-IN COOLER - FANS

LIGHTING LOAD:	0.90	KVA x 125%	1.13	KVA
RECEPTACLE LOAD:	0.72	+(0.00 x 50%,	0.72	KVA
MISC LOAD:			1.15	KVA
MECHANICAL LOAD:			10.15	KVA
ELECTRIC HEAT LOAD:			0.00	KVA
** TOTAL LOAD:	13.15	KVA =	36.41	A @ 120/208V, 3Ø, 4W

* PANELBOARD FEEDERS ARE SIZED FOR MAN OVERCURRENT DEVICE PER N.E.C. ARTICLE 215-2.
** ALL LOADS ARE BASED UPON N.E.C. ARTICLE 220

NOTES:

(1) CONTRACTOR SHALL PROVIDE UPDATED, TYPED PANEL DIRECTORY AFTER PROJECT COMPLETION, PER N.E.C. ARTICLE 408.4.

(2) USE AVAILABLE SPACE IN PANEL. VERIFY IN THE FIELD. PROVIDE AND INSTALL NEW CIRCUIT BREAKER. MATCH EXISTING IN TYPE, STYLE, AND A.I.C. RATING.

EXISTING BOILER ROOM

* PANEL HBR (1)

25k AIC

277 / 480 VOLTS | 3 Φ | 4 WIRE | 225 AMP | MAIN LUG ONLY

DESCRIPTION	KVA	CB	CKT	CKT	CB	KVA	DESCRIPTION
PARKING LOT LIGHTS	1.10	20	1	2	20	.90	PARKING LOT LIGHTS SECURITY
PARKING LOT LIGHTS	1.25	20	3	4	20	1.10	PARKING LOT LIGHTS
SIGN LOTS	.25	20	5	6	20	.90	FUTURE PARKING LOT LIGHTS
LOADING DOCK CANOPY LTS	.50	20	7	8	20	.85	FRONT CANOPY LIGHTS
COURT YARD LIGHTS	.45	20	9	10	20	.50	MECHANICAL/ELECT RM LTS
			11	12			
CONDENSING UNIT #1	35.42	80	13	14	35	16.60	CONDENSING UNIT #2
			15	16			
			17	18			
SYSTEM PUMP #2	22.30	50	19	20	50	22.30	SYSTEM PUMP #1
			21	22			
			23	24			
HOT WATER CIRCULATOR #3	2.82	15	25	26	15	6.31	DUPLEX AIR COMPRESSOR
			27	28			
SPARE	-	20	29	30			
SPARE	-	20	31	32	20	50.00	TRANSFORMER T-4 (15 KVA) PANEL - BR
SPARE	-	20	33	34			
SPARE	-	20	35	36	20	-	SPARE
			37	38	20	-	SPARE
WALK-IN FREEZER (EXTERIOR) CONDENSING UNIT	7.14	20	39	40	-	-	-
			41	42	-	-	-

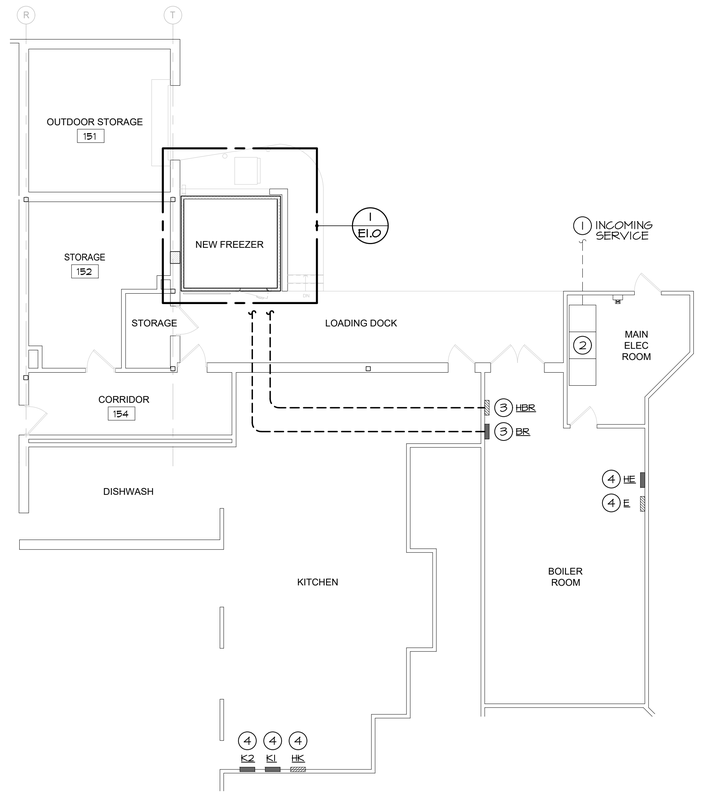
LIGHTING LOAD:	7.80	KVA x 125%	9.75	KVA
RECEPTACLE LOAD:	0.00	+(0.00 x 50%,	0.00	KVA
MISC LOAD:			0.00	KVA
MECHANICAL LOAD:			40.54	KVA
XFMR PANEL - BR LOAD:			50.00	KVA
** TOTAL LOAD:	150.34	KVA =	100.91	A @ 277/480V, 3Ø, 4W

(2) * PANELBOARD FEEDERS ARE SIZED FOR MAN OVERCURRENT DEVICE PER N.E.C. ARTICLE 215-2.
** ALL LOADS ARE BASED UPON N.E.C. ARTICLE 220

NOTES:

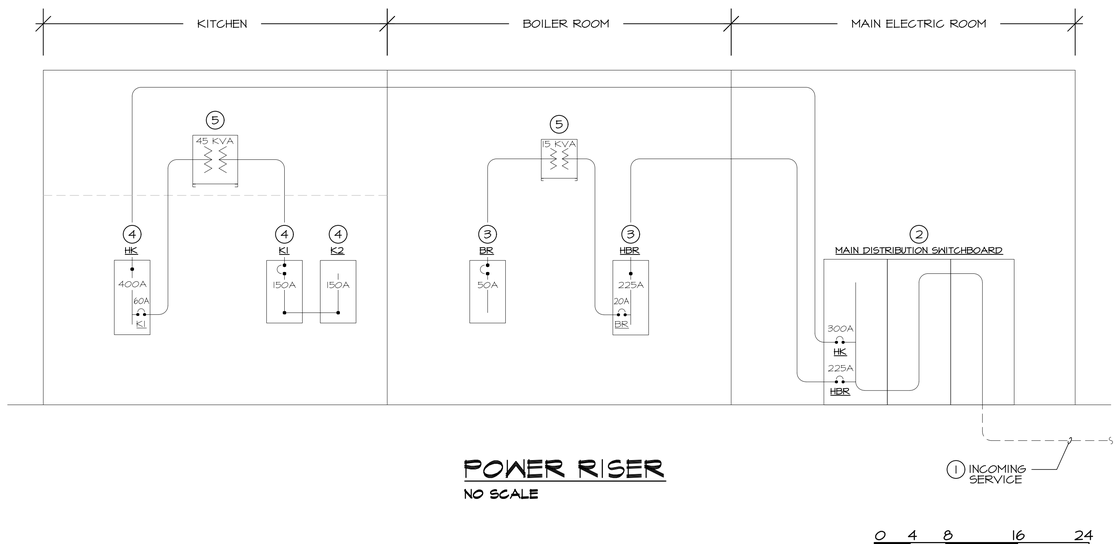
(1) CONTRACTOR SHALL PROVIDE UPDATED, TYPED PANEL DIRECTORY AFTER PROJECT COMPLETION, PER N.E.C. ARTICLE 408.4.

(2) USE AVAILABLE SPACE IN PANEL. VERIFY IN THE FIELD. PROVIDE AND INSTALL NEW CIRCUIT BREAKER. MATCH EXISTING IN TYPE, STYLE, AND A.I.C. RATING.



ELECTRIC ROUTING KEY PLAN

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



POWER RISER

NO SCALE

0 4 8 16 24

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

DRAWING NOTES

(1) EXISTING 277/480V, 3Ø, 4W, 2000A INCOMING ELECTRIC UTILITY SERVICE TO REMAIN.
(2) EXISTING MAIN DISTRIBUTION SWITCHBOARD "MDS" TO REMAIN.
(3) EXISTING PANELBOARD TO REMAIN. REFER TO SCHEDULE ON THIS SHEET FOR MORE INFORMATION (PROPOSED SOURCE FOR PROPOSED WALK-IN FREEZER EQUIPMENT).
(4) EXISTING PANELBOARD REMAIN. SHOWN FOR REFERENCE ONLY.
(5) EXISTING TRANSFORMER TO REMAIN. SHOWN FOR REFERENCE ONLY.

REVISIONS

REV#	DATE	DESCRIPTION
	5/28/2023	FINAL REVIEW

ARCHITECTS
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PLANNERS
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P.O. Box 727, 5 South Main Street Bel Air, Maryland 21014

CLIENT: HARFORD COUNTY PUBLIC SCHOOLS
102 S. HICKORY AVENUE, BEL AIR, MD 21014

POWER RISER, SCHEDULE

NEW WALK-IN FREEZER AT CHURCH CREEK ELEMENTARY
4299 CHURCH CREEK ROAD
BELCAMP, MD 21017

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, TIMOTHY SMIDT, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21585, EXPIRATION DATE: MAY 8, 2025.

TEI
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2216 Commerce Road, Suite 1
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410-692-5816
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DATE: 7/10/2024	DRAWING NO: E2.0
SCALE: AS NOTED	
DRAWN BY: KWN	
CHECKED BY: TJS	TEI JOB NUMBER: 24043

BID / PERMIT DRAWINGS

GENERAL NOTES

1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH ALL CURRENT NATIONAL AND LOCAL ELECTRICAL AND ENERGY CODES.
2. CONNECT EXIT LIGHTS AND NIGHT LIGHTS (NL) TO NEAREST BUILDING UNSWITCHED LIGHTING CIRCUIT SERVING RESPECTIVE AREA. INDICATE "EMERGENCY LIGHTING/UNIT EQUIPMENT" IN PANELBOARD CIRCUIT DIRECTORY PER NEC 700.12(F).
3. ALL WIRING SHALL BE COPPER, #12 AWG MINIMUM, TYPE THWN/THHN INSULATION, INSTALLED IN CONDUIT (3/4" MINIMUM). NO ROMEX CABLE PERMITTED. MC CABLE MAY BE USED, WHERE PERMITTED BY CODE, FOR WORK ABOVE CEILINGS AND CONCEALED IN WALLS.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHTING FIXTURES AND GRID COORDINATION.
5. THE WIRE SIZE INDICATED IN THE HOMERUN SHALL BE USED THROUGHOUT THE CIRCUIT.
6. SEAL ALL CONDUIT PENETRATIONS THRU RATED WALLS AND FLOORS TO MAINTAIN FIRE INTEGRITY. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE WALL LOCATIONS WHERE APPLICABLE.
7. GROUND, PHASE, AND NEUTRAL CONDUCTORS SHALL BE PIG-TAILED IN OUTLET BOXES OR MULTI-OUTLET ASSEMBLY FOR RECEPTACLES SO THAT GROUND AND ELECTRICAL SERVICE WILL NOT BE DISTURBED TO OTHER RECEPTACLES ON THE SAME MULTI-WIRE CIRCUIT IF RECEPTACLE IS REMOVED.
8. CONTRACTOR SHALL NOTE THAT BRANCH CIRCUIT WIRING IS NOT SHOWN; HOWEVER, CIRCUIT NUMBERS ARE SHOWN ADJACENT TO ALL OUTLETS/FIXTURES. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BRANCH WIRING BASED ON THE CIRCUIT NUMBERS SHOWN TO COMPLETE THE WIRING SYSTEM.
9. ALL BRANCH CIRCUITS SHALL BE RUN CONCEALED IN EXISTING AND NEW WALLS. CUT AND PATCH EXISTING WALLS AND SURFACES AS REQUIRED.
10. COORDINATE LOCATION OF NEW WALL DEVICES WITH ARCHITECTURAL DRAWINGS AND THE OWNER'S FURNITURE LAYOUT PRIOR TO ROUGH-IN.
11. ALL TELEPHONE/DATA WIRING AND JACKS SHALL BE PROVIDED AND INSTALLED BY THE OWNER'S COMMUNICATIONS VENDOR. ALL EXPOSED CABLING ABOVE CEILING SHALL BE PLENUM RATED WHEN THOSE CONDITIONS APPLY.
12. CONTRACTOR SHALL PROVIDE UPDATED PANEL SCHEDULES OF ALL CIRCUITS AFFECTED BY PROJECT SCOPE OF WORK. WHERE APPLICABLE, IDENTIFY ALL MISCELLANEOUS CIRCUITS NOT INDICATED ON SCHEDULES. PANEL DIRECTORIES SHALL PROVIDE ACCURATE AND LEGIBLE DESCRIPTIONS OF CIRCUITS TO IDENTIFY THEIR SPECIFIC PURPOSE/USE (WHAT IS BEING SERVED) AND SPECIFIC LOCATION DISTINGUISHABLE FROM ALL OTHER CIRCUITS PER NEC ARTICLE 408.4.
13. CLARIFICATION: IF THE CONTRACT DOCUMENTS ARE FOUND TO BE UNCLEAR, AMBIGUOUS, OR CONTRADICTORY, THE CONTRACTOR MUST REQUEST CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH THAT PART OF THE WORK.
14. CONTRACTOR SHALL COORDINATE SWITCH DEVICE COLOR AND ASSOCIATED COVERPLATE MATERIAL/FINISH WITH ARCHITECT PRIOR TO ORDERING.
15. THE ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT IN ACCORDANCE WITH THE INTENT OF THESE DRAWINGS.
16. EXISTING CONDITIONS CLARIFICATION: ALL EXISTING CONDITION FLOOR PLANS, EXISTING EQUIPMENT/DEVICE LOCATIONS AND SIZES, ETC, SHOWN ON THE CONTRACT DOCUMENTS INDICATE EXISTING CONDITIONS AS KNOWN. THE EXISTING CONDITIONS ARE NOT INTENDED TO BE "AS BUILT" AND MAY DIFFER FROM THAT SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL EXISTING CONDITIONS, PARTICULARLY WHERE THEY IMPACT THE PROPOSED WORK, PRIOR TO CONSTRUCTION. MINOR VARIATIONS CAN BE EXPECTED. ANY REQUIRED DEVIATION FROM THE CONTRACT DOCUMENTS AS A RESULT OF DIFFERING SITE CONDITIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
17. CLARIFICATION OF DRAWINGS DURING BID PHASE: SHOULD A BIDDER FIND DISCREPANCIES IN OR OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, OR SHOULD HE BE IN DOUBT WITH REGARD TO THEIR INTENT, HE SHALL NOTIFY THE ENGINEER BEFORE SUBMITTING HIS BID PROPOSAL. THE ENGINEER SHALL THEN SEND WRITTEN INSTRUCTIONS TO ALL BIDDERS. ORAL INSTRUCTIONS SHALL NOT BE BINDING TO EITHER THE ENGINEER OR OWNER. IF THIS CONTRACTOR FAILS TO COMPLY WITH THIS REQUIREMENT, HE SHALL ACCEPT THE ENGINEER'S INTERPRETATION REGARDING THE INTENT OF THE CONTRACT DOCUMENTS.
18. ALL ELECTRICAL OUTLET BOXES SHALL BE STAMPED STEEL. WHERE ELECTRICAL OUTLET BOXES ARE INSTALLED WITHIN A U.L. RATED FLOOR/CEILING OR PARTITION ASSEMBLY, THE ANNULAR SPACE BETWEEN OUTLET BOX AND PENETRATING MEMBRANE SHALL NOT EXCEED 1/8". WHERE REQUIRED BY LOCAL OFFICIALS, THIS ANNULAR SPACE SHALL BE SEALED WITH A U.L. APPROVED FIRE STOP SEALANT.

ELECTRICAL SYMBOLS LIST

NOTE: ALL MOUNTING HEIGHTS (M.H.) ARE TO CENTER LINE OF THE OUTLET BOX UNLESS OTHERWISE INDICATED.

SYMBOL	DESCRIPTION
	FIXTURE - 4' LINEAR, HIGH IMPACT, GASKETED LED FIXTURE - CEILING
	FIXTURE - VAPOR PROOF GLOBE LIGHT
$	SWITCH-SINGLE POLE
	RECEPTACLE - 20A - 125 VOLTS DUPLEX, DOUBLE DUPLEX - M.H. +18"
	RECEPTACLE - 20A - 125 VOLTS DUPLEX, DOUBLE DUPLEX - M.H. +/- 42"
	MOTOR - THREE PHASE
	MOTOR - SINGLE PHASE
	SAFETY DISCONNECT SWITCH - FURNISHED BY EQUIP. MANUFACTURER
	PANELBOARD 277/480 VOLTS
	PANELBOARD 120/208 VOLTS
	JUNCTION BOX - WALL, CEILING
(#)	DRAWING NOTE
	HOMERUN TO PANEL-LETTER AND NO. INDICATES CIRCUIT NUMBER.
S	CONNECT TO CIRCUIT

ABBREVIATIONS

GRD	- GROUND	DWG	- DRAWING
M.H.	- MOUNTING HEIGHT	C, CDT	- CONDUIT
AFF	- ABOVE FINISHED FLOOR	T	- TRANSFORMER
GFI	- GROUND FAULT INTERRUPTER	NL	- NIGHT LIGHT
TYP	- TYPICAL	LTS	- LIGHTS
cd	- CANDELA RATING	RECP	- RECEPTACLE
U.O.N.	- UNLESS OTHERWISE NOTED	DED	- DEDICATED
EX.	- EXISTING	LED	- LIGHT EMITTING DIODE
OCC	- OCCUPANCY	N.I.C.	- NOT IN CONTRACT
AHJ	- AUTHORITY HAVING JURISDICTION	AL	- ALUMINUM

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SYMBOLS LIST

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STATE OF MARYLAND · TIMOTHY JOSEPH SMIDT · 21585 · REGISTERED PROFESSIONAL ENGINEER

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