PROJECT BID SPECIFICATIONS

UPPER VALLEY CAREER CENTER

HEALTH SCIENCE BUILDING ADDITION

Early Site and Restroom Renovation Project

8811 Career Drive
Piqua, Ohio 45356

BID / PERMIT SUBMITTAL

MARCH 22, 2024

LPA Project No. 233448.00

LEVIN PORTER ARCHITECTS
3011 NEWMARK DRIVE
MIAMISBURG, OHIO 45342
O: 937.224.1931
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Levin Porter Associates Inc. dba Levin Porter Architects

PROJECT MANUAL & SPECIFICATIONS

DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS

DIVISION 01 - GENERAL REQUIREMENTS

DIVISION 02 – EXISTING CONDITIONS

DIVISION 03 – CONCRETE

END OF SECTION

Public Notice

Sealed bids will be received by the Upper Valley Career Center Board of Education as provided in this notice for the **Early Site and Restroom renovation** of the addition and renovation project will be received by the Office of the Treasurer, Upper Valley Career Center located at 8811 Career Drive, Piqua, Ohio 45356

Bids shall be enclosed in a sealed envelope addressed to the Upper Valley Career Center Board of Education, ATTN Mr. Anthony Fraley, Treasurer, 8811 Career Drive, Piqua, Ohio 45356, and plainly marked on the outside "**UPPER VALLEY CAREER CENTER ADDITION AND RENOVATION EARLY SITE AND RESTROOM PROJECT BID**." Bids will be received until 3:00 P.M., local time April 11, 2024, and immediately after the deadline the bids will be opened and publicly read aloud at the Upper Valley Career Center, Conference Room 114, 8811 Career Drive, Piqua, Ohio 45356.

A pre-bid conference will be held on March 26th, 2024, at 3:00 pm at the Upper Valley Career Center, Conference Room 114, 8811 Career Drive, Piqua, Ohio 45356.

Copies of bidding documents may be examined during regular business hours at the Dayton Builders Exchange and McGraw-Hill Dodge and the office of the Architect, Levin Porter Associates, Inc. 3011 Newmark Drive, Miamisburg, OH 45342. Qualified Bidders may obtain digital sets of bidding documents after March 20th, 2024 by contacting Mark Wiseman at mwiseman@levin-porter.com. Documents will be distributed via electronic .PDF file only (no fee).

All bids must include a Bid Guaranty, as described in the Instructions to Bidders. Prevailing wage rates do not apply. No bidder may withdraw its bid within 60 days after the opening; the Board reserves the right to waive irregularities, reject any or all bids, and conduct necessary investigations to determine bidder responsibility.

BOARD OF EDUCATION
UPPER VALLEY CAREER CENTER

By: Patrick Gibson, Director of Business Operations
Publication Dates: March 20, 2024 & March 24, 2004

INSTRUCTIONS TO BIDDERS

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A. BIDDER'S PLEDGE AND AGREEMENT

1. **Each Bidder acknowledges that this is a public project involving public funds and that the Owner expects and requires that each successful Bidder adhere to the highest ethical and performance standards. Each Bidder by submitting a bid pledges and agrees that (a) it will act at all times with absolute integrity and truthfulness in its dealings with the Owner and the Design Professional, (b) it will use its best efforts to cooperate with the Owner and the Design Professional and all other Contractors on the Project and at all times will act with professionalism and dignity in its dealings with the Owner, Design Professional, and other Contractors, (c) it will assign only competent supervisors and workers to the Project, each of whom is fully qualified to perform the tasks that are assigned to him/her, and (d) it has read, understands and will comply with the terms of the Contract Documents.**

B. EXAMINATION OF CONTRACT DOCUMENTS AND SITE CONDITIONS AND RELIANCE UPON TECHNICAL DATA

1. Each Bidder shall have a competent person carefully and diligently review each part of the Contract Documents, including the Divisions of the Specifications and parts of the Drawings that are not directly applicable to the Work on which the Bidder is submitting its bid. By submitting its bid, each Bidder represents and agrees, based upon its careful and diligent review of the Contract Documents, that it is not aware of any conflicts, inconsistencies, errors, or omissions in the Contract Documents for which it has not notified the Design Professional in writing at least ten (10) days prior to the bid opening. If there are any such conflicts, inconsistencies, errors, or omissions in the Contract Documents, the Bidder (i) will provide the labor, equipment, or materials of the better quality or greater quantity of Work and/or (ii) will comply with the more stringent requirements. The Bidder will not be entitled to any Change Order, additional compensation, or additional time on account of such conditions for any conflicts, inconsistencies, errors, or omissions that would have been discovered by such careful and diligent review, unless it has given prior written notice to the Design Professional.

2. Each Bidder shall have a competent person carefully and diligently inspect and examine the entire site and the surrounding area, including all parts of the site applicable to the Work for which it is submitting its bid, including location, condition, and layout of the site and the location of utilities, and carefully correlate the results of the inspection with the requirements of the Contract Documents. The Bidder's bid shall include all costs attributable to site and surrounding area conditions that would have been discovered by such careful and diligent inspection and examination of the site and the surrounding area, and the Bidder shall not be entitled to any Change Order, additional compensation, or additional time on account of such conditions.

3. The Bidder may rely upon the general accuracy of any technical data identified in the Owner-Contractor Agreement (e.g., any soils exploration reports, soil boring logs, site survey, or abatement reports) in preparing its bid, but such technical data are not part of the Contract Documents. Except for the limited reliance described in the preceding sentence, Bidder may not, if awarded a contract for the Work, rely upon or make any Claim against the Owner or Design Professional, or any of their agents or employees, with respect to any of the following:

    (a) the completeness of such reports and drawings for Bidder's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the successful Bidder and safety precautions and programs incident thereto; or

(b) any interpretation by the successful Bidder of or conclusion drawn from any technical data or any such other data, interpretations, opinions, or information. For example, all interpolations and extrapolations of data performed by the Bidder to estimate locations or quantities of subsurface strata are independent factual assumptions, which Owner does not warrant.

4. Each Bidder will be deemed to have actual knowledge of all information provided or discussed at the pre-bid meeting.

C. PROJECT

1. The Project is the Early Site and Restroom Project ("the Project"). The Project and Work for the Project consists of renovating 535 square foot of the existing restrooms and early utility line connections to accommodate the future 48,670 square foot addition of the existing facility at the Upper Valley Career Center, in accordance with the Drawings and Specifications prepared by the Design Professional.

2. The Design Professional for the Project is:

Levin Porter Associates, Inc.
3011 Newmark Drive
Miamisburg, Ohio 45342
Design Professional Representative: Mark Wiseman, AIA, LEED AP
Email: mwiseman@levin-porter.com

D. WORK

1. Only one contract will be issued by the Owner for constructing the Project, the General Contract, which will cover all scopes of work necessary to construct the Project.

2. The Contractor awarded the General Contract (General Contractor) will be responsible for the performance and coordination of any and all subcontractors and suppliers either directly or indirectly contracted with the General Contractor.

3. Owner may provide Bidders access to the Project site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations and Owner's policies relative to excavation and utility locates. Bidders must follow COVID-19 safety protocols required by law or requested by the Owner. **Outside of the pre-bid conference**, Bidders may visit the site by contacting Patrick Gibson, Director of Business Operations, at gibsonp@uppervalleycc.org to set an appointment.

E. ESTIMATE OF COST

1. The total estimated construction cost for the base bid is $450,000

F. CONTRACT DOCUMENTS AND PRE-BID MEETING

1. The Contract Documents consist of the Contract Documents listed in Section 1 of the Owner-Contractor Agreement.

2. Electronic copies of the Contract Documents will be available by request, from the office of the Architect, Mark Wiseman, at mwiseman@levin-porter.com.

3. Bidders shall use complete sets of Contract Documents in preparing bids. Neither the Owner nor the Design Professional assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

4. The Owner or the Design Professional, in making the Contract Documents available on the above terms, does so only for the purpose of obtaining bids on the Work and does not confer a license or grant for any other use.

5. A pre-bid conference will be held on **March 26th 2024 at 3:00 pm** at the Upper Valley Career Center, Room 114, 8811 Career Drive, Piqua, Ohio 45356**.**

   Attendance is highly recommended. The Owner shall not be held liable if a bidder is unable to attend due to technical or other issues or obstructions.

G. PREPARATION OF BIDS

1. All bids must be submitted on the "Bid Form" furnished with the Contract Documents.

2. All blank spaces shall be filled in, in ink or typewritten, in words and figures, and in figures only where no space is provided for words, and signed by the Bidder. The wording on the Bid Form shall be used without change, alteration, or addition. Any change in the wording or omission of specified accompanying documents may cause the bid to be rejected. If there is an inconsistency or conflict in the bid amount, the lowest amount shall control, whether expressed in numbers or words.

3. Bidders shall note receipt of Addenda on the Bid Form. If the Bidder fails to acknowledge receipt of each Addendum, the Bid shall be deemed non-responsive, unless the Bid amount clearly and unambiguously reflects receipt of the Addendum or the Addendum involves only a matter of form and does not materially affect the price, quantity or quality of the Work to be performed.

4. Each Bidder shall submit **2 originals** of its bid to the Owner. The Bid Form shall be signed with the name typed or printed below the signature. A Bid shall not be submitted by facsimile transmission or any other electronic means. A Bidder that is a corporation shall sign its bid with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.

5. Bids shall be enclosed in a sealed opaque envelope with the Bidder's name, plainly marked on the outside "**UPPER VALLEY CAREER CENTER ADDITION AND RENOVATION EARLY SITE AND RESTROOM PROJECT BID**," and addressed as follows:

   Upper Valley Career Center Board of Education
   ATTN: Patrick Gibson, Director of Business Operations
   8811 Career Drive
   Piqua, Ohio 45356

   Bids must be received at the location designated above before

   3:00 P.M., local time APRIL 11TH, 2024.

   Hand deliveries to this location are preferred. Respondents are responsible for confirming current operating hours.

A public bid opening will take place at the Upper Valley Career Center, Room 114, 8811 Career Drive, Piqua, Ohio 45356 immediately following the bid submission deadline.

The Owner shall not be held liable if a bidder is unable to attend due to technical or other issues or obstructions.

6. **The completed Bid Form shall be accompanied by the following completed documents:**

   Bid Guaranty and if applicable, Contract Bond (See Paragraph G.8 below.)

   Contractor's Qualification Statement (See Paragraph H.4 below.)

7. The Bidder shall take the following precautions in preparing its bid:

   a. Sign the bid and check to ensure all blank spaces have been filled in with requested information and that the specified accompanying documents (listed in Paragraph G.6 above) have been included in a sealed opaque envelope addressed as described in item Paragraph G.5 above.

   b. When the Bid Form provides for quoting either an addition or deduction for an Alternate item, indicate whether the sum named is an addition or deduction. If it is not indicated, it will be conclusively presumed that the amount is a deduction.

   c. When the Bid Form provides for quoting a unit price, the Bidder should quote the unit price as set forth in the Contract Documents and as described in Paragraph L.1 below.

   d. When applicable, make sure that the Bid Guaranty is properly executed and signed by:

      1) The Bidder
      2) The Surety or Sureties

   e. Make sure that the amount of the Bid Guaranty (if the Bid Guaranty is in the form of a certified check, letter of credit, or cashier's check) is for a specific sum in an amount as instructed in Paragraph G.8.a below. If the Bid Guaranty is in the form of the Bid Guaranty and Contract Bond, the amount may be left blank; if an amount is inserted, it must equal the total of the base bid plus the amount of all add alternates included in the bid. If inserted, then the failure to state an amount equal to the total of the base bid and all add alternates shall make the bid non-responsive if the Owner selects alternates not included in the amount.

   f. Make sure that the appropriate bid package and scope of work is inserted in the correct space on the Bid Guaranty and Contract Bond Form. Failure to include work covered by the bid submitted may make the bid non-responsive.

8. Bonds and Guarantees

   a. Bid Guaranty: Bidder shall furnish a Bid Guaranty, in the form prescribed in Sections 153.54, 153.57, and 153.571 of the Ohio Revised Code, in the form of either: (1) a bond for the full amount of the Base Bid plus the amount of all Add Alternates included in the Bidder's bid, in the form of the Bid Guaranty and Contract Bond included in the Contract Documents; or (2) a certified check, cashier's check, or irrevocable letter of credit in a form satisfactory to the Owner in an amount equal to 10% of the bid. Bid amount shall be the total of all sums bid, including all add alternatives, but excluding all deduct alternatives. NOTE: AIA or EJCDC Bid Bond forms are not acceptable.

b. Contract Bond: The successful Bidder, who, as a Bid Guaranty, submits a certified check, cashier's check, or irrevocable letter of credit in an amount equal to 10% of the bid, shall furnish a Contract Bond in the form Contract Bond included in the Contract Documents in an amount equal to 100% of the Contract Sum. NOTE: AIA or EJCDC Bond forms are not acceptable.

c. The bond must be issued by a surety company authorized by the Ohio Department of Insurance to transact business in the State of Ohio and acceptable to the Owner. The bond must be issued by a surety capable of demonstrating a record of competent underwriting, efficient management, adequate reserves, and sound investments. These criteria will be deemed to be met if the surety currently has an A.M. Best Company Policyholders Rating of "A-" or better and has or exceeds the Best Financial Size Category of Class VI. Other sureties may be acceptable to the Owner, in its sole discretion

d. All bonds shall be signed by an authorized agent of an acceptable surety and by the Bidder.

e. Surety bonds shall be supported by credentials showing the Power of Attorney of the agent, a certificate showing the legal right of the Surety Company to do business in the State of Ohio, and a financial statement of the Surety.

f. The Bid Guaranty, as applicable, shall be in the name of or payable to the order of the Owner.

g. The name and address of the Surety and the name and address of the Surety's Agent should be typed or printed on each bond.

H. METHOD OF AWARD

1. **All bids shall remain open for acceptance for sixty (60) days** following the day of the bid opening, but the Owner may, in its sole discretion, release any bid and return the Bid Guaranty prior to that date. The Bid Guaranty shall be subject to forfeiture, as provided in the Ohio Revised Code, if a bid is withdrawn during the period when bids are being held.
2. The Owner reserves the right to reject any, part of any, or all bids and to waive any informalities and irregularities. The Bidder expressly acknowledges this right of the Owner to reject any or all bids or to reject any incomplete or irregular bid. Bidders must furnish all information requested on or accompanying the Bid Form. Any false representations or failure to provide information may result in disqualification of the bid.
3. Determination of the Lowest Responsible Bid. Subject to the right of the Owner to reject any or all bids, the Owner will award the Contract for the Work to the bidder submitting the lowest responsible bid that is responsive to the bidding requirements, taking into consideration accepted alternates. In evaluating bids, the Owner may consider the qualifications of the Bidders, whether or not the bids comply with the prescribed requirements, and alternates and unit prices, if requested, on the Bid Form. The Owner may also consider the qualifications and experience of subcontractors and suppliers. The Owner may conduct such investigations as are deemed necessary to establish the qualifications and financial ability of the Bidder and its subcontractors and suppliers. The factors the Owner may consider in determining which bid is the lowest responsible include the factors set forth below. The Owner, in its discretion, may consider and give such weight to these criteria as it deems appropriate.

   a. The Bidder's work history. The Bidder should have a record of consistent customer satisfaction and of consistent completion of projects, including projects that are comparable to or larger and more complex than the Owner's Project, on time and in accordance with the applicable Contract Documents, and based upon the Bidder’s claims history. If the

Bidder's management operates or has operated another construction company, the Owner may consider the work history of that company in determining whether the Bidder submitted the lowest responsible bid.

The Owner will consider the Bidder's prior experience on other projects of similar scope and/or complexity including prior projects with the Owner and/or Design Professional, including the Bidder's demonstrated ability to complete its work on these projects in accordance with the Contract Documents and on time, and will also consider its ability to work with the Owner and Design Professional as a willing, cooperative, and successful team member. Bringing overstated claims, an excessive number of claims, acting uncooperatively, and filing lawsuits against project owners and/or their design professionals on prior projects of similar scope and/or complexity will be deemed evidence of a Bidder's inability to work with the Owner and Design Professional as a willing, cooperative, and successful team member.

The Bidder authorizes the Owner and its representatives to contact the owners and design professionals (and construction managers, if applicable) on projects on which the Bidder has worked and authorizes and requests such owners and design professionals (and construction managers) to provide the Owner with a candid evaluation of the Bidder's performance. By submitting its bid, the Bidder agrees that if it or any person, directly or indirectly, on its behalf or for its benefit brings an action against any of such owners or design professionals (or construction managers) or the employees of any of them as a result of or related to such candid evaluation, the Bidder will indemnify and hold harmless such owners, design professionals (and construction managers) and the employees of any of them from any claims, whether or not proven, that are part of or are related to such action and from all legal fees and expenses incurred by any of them arising out of or related to such legal action. This obligation is expressly intended for the benefit of such owners, design professionals (and construction managers), and the employees of each of them.

b. The Bidder's financial ability to complete the Contract successfully and on time without resort to its Surety.

c. The Bidder's prior experience with similar work on comparable or more complex projects.

d. The Bidder's prior history for the successful and timely completion of projects, including the Bidder's history of filing claims and having claims filed against it.

e. The Bidder's equipment and facilities.

f. The adequacy, in numbers and experience, of the Bidder's work force to complete the Contract successfully and on time.

g. The Bidder's compliance with federal, state, and local laws, rules, and regulations, including but not limited to the Occupational Safety and Health Act and Ohio ethics laws.

h. The Bidder's participation in a drug-free workplace program acceptable to the Owner, and the Bidder's record for both resolved and unresolved findings of the Auditor of State for recovery as defined in Section 9.24 of the Ohio Revised Code.

i. The Owner's prior experience with the Bidder's surety.

j. The Bidder's interest in the Project as evidenced by its attendance at any pre-bid meetings or conferences for bidders.

k. Depending upon the type of the work, other essential factors, as the Owner may determine and as are included in the Specifications.

l. The number of years the Bidder has been actively engaged as a contractor in the construction industry.

m. Financial responsibility demonstrated by the Bidder and whether Bidder possesses adequate resources and availability of credit, the means and ability to procure insurance and acceptable performance bonds required for the Project and whether any claims have been made against performance bonds secured by the bidder on other construction projects.

n. The foregoing information with respect to each of the Subcontractors and Suppliers that the Bidder intends to use on the Project.

4. **Qualifications Statement. Each Bidder will submit with its bid a completed Contractor Qualifications Statement, which is included with the Contract Documents, and thereafter provide the Design Professional promptly with such additional information as the Design Professional may request regarding the Bidder's qualifications. A Bidder shall submit any requested additional information within 24 hours of the date on the request.**

5. The failure to submit requested information on a timely basis may result in the determination that the Bidder has not submitted the lowest responsible bid.

6. By submitting its bid, the Bidder agrees that the Owner's determination of which bidder is the lowest responsible bidder shall be final and conclusive, and that if the Bidder or any person on its behalf challenges such determination in any legal proceeding, whether or not proven, the Bidder will indemnify and hold the Owner and its employees and agents harmless from any claims included or related to such legal proceeding, whether or not proven, and from legal fees and expenses incurred by the Owner, its employees, or agents that arise out of or are related to such challenge.

7. **After bid opening, within 24 hours of a request made by the Owner or Design Professional, the apparent low Bidder and any other Bidder so requested must submit the following:**

   a. SUBCONTRACTORS: For all subcontracts with an estimated value of at least $20,000, a list of all Subcontractors that the Bidder will use to construct the Project, as well as an indication of whether or not the Bidder has ever worked with a proposed Subcontractor before, including the following information for the three most recent projects on which the Bidder and each Subcontractor have worked together:

   - Project Owner
   - Project Name
   - Subcontract Scope
   - Subcontract Value
   - Owner’s contact name and phone number.

   If Bidder and a proposed Subcontractor have not worked together on at least three projects in the five years, Bidder must submit the information set forth above for the three most recent similar projects to the Project that a proposed Subcontractor has worked on.

   The above Subcontractor information, as well as the information pertaining to each proposed Subcontractor, shall be used in the Owner’s determination of the lowest responsible bid.

Once a Bidder identifies its proposed Subcontractors as set forth herein, and Owner makes no objections, the list shall not be changed unless written approval of the change is authorized by the Owner and Design Professional.

b. FINANCING: The following additional financial information is not a public record under Ohio Revised Code Section 149.43 and will be kept confidential, except under proper order of a court, per Ohio Revised Code Section 9.312(A).

i. Provide a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

- Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);
- Net Fixed Assets;
- Other Assets;
- Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes); and
- Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

ii. Provide the name and address of firm preparing attached financial statement, and date thereof.

iii. If the attached financial statement is not for the identical organization named in the completed Contractor's Qualification Statement submitted with the bid, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

8. Affidavit as to Personal Property Taxes. Each successful Bidder shall submit, prior to the time of the entry into the Contract, an affidavit in the form required by Section 5719.042, Ohio Revised Code, regarding the status of the Bidder's personal property taxes. A copy of the affidavit form is included with the Contract Documents.
9. No Bidder may withdraw its bid within **sixty (60)** days after the date bids are opened. The Owner reserves the right to waive any formalities or irregularities or to reject any or all bids.
10. The Owner reserves the right to disqualify bids, before or after opening, upon evidence of collusion with intent to defraud or other illegal practices on the part of the Bidder.
11. Award of Contract. The award of the Contract, when required, will only be made pursuant to a duly adopted resolution of the Owner.

I. EXECUTION OF CONTRACT

1. Within the time designated by the Owner or Design Professional after award of the Contract, the successful Bidder shall execute and deliver to the Owner or Design Professional the required number of copies of the Owner-Contractor Agreement, in the form included in the Contract Documents, and all accompanying documents requested, including, but not limited to, a Contract Bond (if applicable), insurance certificates, and a valid Workers' Compensation

Certificate. The successful Bidder shall have no property interest or rights under the Owner-Contractor Agreement until the Agreement is executed by the Owner.

J. SUBSTITUTIONS/NON-SPECIFIED PRODUCTS

1. Certain brands of material or apparatus are specified. Each bid will be based on these brands, which may be referred to in the Contract Documents as Standards. The use of another brand (referred to as a substitution or proposed equal in the Contract Documents, when a bidder or the contractor seeks to have a different brand of material or apparatus than that specified approved by the Owner for use in the Project) may be requested as provided herein.

2. The products specified in the Contract Documents establish a standard of required function, dimension, appearance, and quality.

3. Bidders wishing to obtain approval to bid non-specified products shall submit written requests to the Design Professional a minimum of ten (10) calendar days before the bid date and hour. To facilitate the submission of requests, a Pre-Bid Substitution Form is included in the Contract Documents. The Bidder shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution, including the name of the proposed manufacturer and/or product and a complete description of the proposed product including the manufacturer's name and model number or system proposed, drawings, product literature, performance and test data, color selections or limitations, and any other information necessary for evaluation. Include a statement including any changes in other materials, equipment, or other work that would be required if the proposed product is incorporated in the materials, equipment, or other work that would be required if the proposed product is incorporated in the work. The burden of proof of the merit of the proposed product is on the proposer. The Design Professional's decision on approval of a proposed product will be final.

   The following will be cause for rejection of a proposed substitution:

   a. Requests submitted by subcontractors, material suppliers, and individuals other than Bidders;

   b. Requests submitted without adequate documentation;

   c. Requests received after the specified cut-off date.

4. When the Design Professional approves a product submission before receipt of bids, the approval will be included in an Addendum, and Bidders may include the pricing of this product in their bid. Bidders shall not rely on approvals made in any other manner.

5. In proposing a non-specified product or a substitution, the Bidder represents and warrants that each proposed product will not result in any changes to the Project, including changes to the Work of other contractors, or any decrease in the performance of any equipment or systems to be installed in the Project and agrees to pay any additional costs incurred by the Owner and the Owner's consultants as a result of a non-specified or substitute product that is accepted.

6. Following the award of the Contract, there shall be no substitutions for specified products, except pursuant to a Change Order. The Owner in its sole discretion may decline to consider a substitution for a Change Order.

K. ALTERNATES

1. The Owner may request bids on alternates. If the Owner requests bids on alternates, the Bidder should include the cost of the alternates requested on its Bid Form.

2. At the time of awarding the Contract, the Owner will select or reject alternates as it determines is in its best interest. A Bidder's failure to include on its Bid Form the cost of an alternate selected by the Owner and applicable to the Bidder's work shall render the bid non-responsive and be grounds for the rejection of the bid. Otherwise, the failure to include the cost of an alternate will not be deemed material.

3. The Bidder acknowledges that although there is an estimate for the cost of the Project, the market conditions may and frequently do result in the estimate being different from the sum of the bids received, either higher or lower. The Bidder understands that the Owner may include alternates, which may include deduct alternates as well as add alternates, to give it flexibility to build the Project with the funds available. The Bidder further understands and acknowledges that use of add and deduct alternates is a long held customary practice in the construction industry in the State of Ohio. The Bidder also acknowledges that the Owner will not make a decision about the alternates on which to base the award of contracts until the bids are received, and the Owner can compare its available funds with the base bids and the cost or savings from selecting different alternates. The Bidder understands that the award to the Bidder submitting the lowest responsible bid will be based on the lowest base bid plus selected alternates, and may result in an award to a Bidder other than the Bidder that submitted the lowest base bid.

4. If, during the progress of the Work, the Owner desires to reinstate any alternate not included in the Contract, the Owner reserves the right to reinstate the alternate at the price bid by the Contractor provided that such action is taken in sufficient time so as not to delay the progress of the work or cause the Contractor additional expense.

L. UNIT PRICES

1. Where unit prices are requested in the Bid Form the Bidder should quote a unit price. Unless otherwise expressly provided in the Contract Documents, such unit prices shall include all labor, materials, and services necessary for the timely and proper installation of the item for which the unit prices are requested. The unit prices quoted in the bid shall be the basis for any Change Orders entered into under the Owner-Contractor Agreement, unless the Design Professional determines that the use of such unit prices will cause substantial inequity to either the Contractor or the Owner.

M. ADDENDA

1. The Owner reserves the right to issue Addenda changing, altering, or supplementing the Contract Documents prior to the time set for receiving bids. The Design Professional will issue the Addenda to clarify bidders' questions and/or to change, alter, or supplement the Contract Documents.

2. Any explanation, interpretation, correction, or modification of the Contract Documents will be issued in writing in the form of an Addendum, which shall be the only means considered binding; explanations, interpretations, etc., made by any other means shall NOT be legally binding. All Addenda shall become a part of the Contract Documents.

3. Bidders shall submit written questions to **Mark Wiseman, AIA, LEED AP, at mwiseman@levin-porter.com by 12:00 p.m. Noon, April 5th, 2024** to allow sufficient time for the Design Professional to respond. All Addenda will be issued, except as hereafter provided, and e-mailed or otherwise furnished to persons who have obtained Contract Documents for the Project, at least seventy-two (72) hours prior to the published time for the opening of bids, excluding Saturdays, Sundays, and legal holidays. If any Addendum is issued within such seventy-two (72) hour period, then the time for opening of bids shall be extended one (1) week with no further advertising of bids required.

4. Copies of each Addendum will be sent only to the Bidders to whom Contract Documents have been issued and to Plan Rooms where copies of the Contract Documents are maintained. Receipt of Addenda shall be indicated by Bidders in the space provided on the Bid Form. Bidders are responsible for acquiring issued Addenda in time to incorporate them into their bid. Bidders should contact the Design Professional prior to the bid opening to verify the number of Addenda issued.
5. Each Bidder shall carefully read and review the Contract Documents and immediately bring to the attention of the Design Professional any error, omission, inconsistency, or ambiguity therein.
6. If a Bidder fails to indicate receipt of all Addenda through the last Addendum issued by the Design Professional on its Bid Form, the bid of such Bidder will be deemed to be responsive only if:
    a. The bid received clearly indicates that the Bidder received the Addendum, such as where the Addendum added another item to be bid upon and the Bidder submitted a bid on that item; or
    b. The Addendum involves only a matter of form or is one which has either no effect or has merely a trivial or negligible effect on price, quantity, quality, or delivery of the item bid upon.

N. INTERPRETATION

1. If a Bidder contemplating submitting a bid for the proposed Project is in doubt as to the true meaning of any part of the Contract Documents, it may submit a written request for an interpretation thereof to **Mark Wiseman, AIA, LEED AP, at mwiseman@levin-porter.com by the deadline for questions per paragraph L.3 above**. Any interpretation of the proposed documents will be made by Addendum only, duly signed by the Design Professional, and a copy of such Addendum will be mailed or delivered to each Bidder receiving a set of Contract Documents and each plan room where the Contract Documents are maintained. The Owner will not be responsible for any other explanation or interpretation of the proposed documents.
2. In interpreting the Contract Documents, words describing materials that have a well-known technical or trade meaning, unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with the well-known meaning recognized by the trade.
3. Bidders are responsible for notifying the Owner and the Design Professional in a timely manner of any ambiguities, inconsistencies, errors, or omissions in the Contract Documents. The Bidder shall not, at any time after the execution of the Contract, be compensated for a claim alleging insufficient data, incomplete Contract Documents, or incorrectly assumed conditions regarding the nature or character of the Work, if no request was made by the Bidder prior to the bid opening.

O. STATE SALES AND USE TAXES

1. The Owner is a political subdivision of the State of Ohio and is exempt from taxation under the Ohio Sales Tax and Use Tax Laws. Building materials that the successful Bidder purchases for incorporation into the Project will be exempt from state sales and use taxes if the successful Bidder provides a properly completed Ohio Department of Taxation Construction Contract Exemption Certificate to the vendors or suppliers when the materials are acquired. The Owner will execute properly completed certificates on request.

P. DATE FOR SUBSTANTIAL COMPLETION/ DATE FOR FINAL COMPLETION /LIQUIDATED DAMAGES

1. The Date for Substantial Completion (aka Contract Time), Date for Final Completion, and Liquidated Damages shall be as defined and set forth in the Owner-Contractor Agreement. **By submitting its Bid, each Bidder agrees that the period for performing its Work is reasonable**.

Q. OWNER'S RIGHT TO WAIVE DEFECTS AND IRREGULARITIES

1. The Owner reserves the right to waive any and all irregularities provided that the defects and irregularities do not affect the amount of the bid in any material respect or otherwise give the Bidder a competitive advantage.

R. MODIFICATION/WITHDRAWAL OF BIDS

1. Modification. A Bidder may modify its bid by written communication to the Owner addressed to the Owner's Representative at any time prior to the scheduled closing time for receipt of bids, provided such written communication is received by Owner's Representative prior to the bid deadline. The written communication shall not reveal the bid price, but should provide the addition or subtraction or other modification so that the final prices or terms will not be known until the sealed bid is opened. If the Bidder's written instructions with the change in bid reveal the bid amount in any way prior to the bid opening, the bid may be rejected as non-responsive.
2. Withdrawal Prior to Bid Deadline. A Bidder may withdraw its bid at any time for any reason prior to the bid deadline for the opening of bids. The request to withdraw shall be made in writing to and received by the Owner prior to the time of the bid opening.
3. Withdrawal after Bid Deadline.
    a. All bids shall remain valid and open for acceptance for a period of at least 60 days after the bid opening; provided, however, that a Bidder may withdraw its bid from consideration after the bid deadline when all of the following apply:
        (1) the price bid was substantially lower than the other bids;
        (2) the reason for the bid being substantially lower was a clerical mistake, rather than a mistake in judgment, and was due to an unintentional and substantial error in arithmetic or an unintentional omission of a substantial quantity of work, labor, or material;
        (3) the bid was submitted in good faith; and
        (4) the Bidder provides written notice to the Owner, to the attention of the Owner's Representative, within two (2) business days after the bid opening for which the right to withdraw is claimed.
    b. No bid may be withdrawn under this provision if the result would be the awarding of the contract on another bid for the bid package from which the Bidder is withdrawing its bid to the same Bidder.
    c. If a bid is withdrawn under this provision, the Owner may award the Contract to another Bidder determined by the Owner to be the lowest responsible bidder or the Owner may reject all bids and advertise for other bids. In the event the Owner advertises for other bids, the withdrawing Bidder shall pay the costs incurred in connection with the rebidding by the Owner, including the cost of printing new Contract Documents, required advertising, and printing and mailing notices to prospective bidders, if the Owner finds that such costs would not have been incurred but for such withdrawal.

S. COMPLIANCE WITH APPLICABLE LAWS

1. By submitting a bid for Work on the Project, the Bidder acknowledges that it is in compliance with applicable federal, state, and local laws and regulations, including, but not limited to, the following:

a. Equal Employment Opportunity/Nondiscrimination. The Bidder agrees that if it is awarded a contract that in the hiring of employees for performance of work under the contract or any subcontract, neither it nor any subcontractor, or any person acting on its behalf or its subcontractor's behalf, by reason of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color, shall discriminate against any citizen of the state in the employment of labor or workers who are qualified and available to perform work to which the employment relates. The Bidder further agrees that neither it nor any subcontractor or any person on its behalf or on behalf of any subcontractor, in any manner, shall discriminate against or intimidate any employees hired for the performance of the work under the contract on account of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color.

b. Ethics Laws. The Bidder represents that it is familiar with all applicable ethics law requirements, including without limitation Sections 102.04 and 3517.13 of the Ohio Revised Code, and certifies that it is in compliance with such requirements.

T. FINDINGS FOR RECOVERY

1. By submitting its bid, each Bidder certifies for reliance of the Owner that it has no unresolved finding for recovery against it issued by the Auditor of the State of Ohio on or after January 1, 2001, except as permitted by Section 9.24 (F) of the Ohio Revised Code.

END OF INSTRUCTIONS TO BIDDERS

BID FORM

1.01 BID SUBMITTED BY:

_____
(Contractor)

Date bid submitted: _____

1.02 DELIVER TO:

Upper Valley Career Center Board of Education
ATTN: Patrick Gibson, Director of Business Operations
8811 Career Drive
Piqua, Ohio 45356

1.03 Having carefully reviewed the Instructions to Bidders, Drawings, Specifications and other Contract Documents for the Project titled **Early Site and Restroom Project** including having also received, read, and taken into account the following Addenda:

Addendum No.	Dated
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

and likewise having inspected the site and the conditions affecting and governing the Project, the undersigned hereby proposes to furnish all materials and to perform all labor, as specified and described in the said Specifications and/or as shown on the said Drawings for all Work necessary to complete the Project on a timely basis and in accordance with the Contract Documents regardless of whether expressly provided for in such Specifications and Drawings.

1.04 Before completing the Bid Form, the undersigned represents that it has carefully reviewed the Request for Bids, Instructions to Bidders, this Bid Form, Form of Bid Guaranty and Contract Bond, Contractor's Affidavit (O.R.C. 5719.042), Owner-Contractor Agreement as modified for the Project, Drawings, Project Specifications, and other Contract Documents. Failure to comply with provisions of the Contract Documents may be cause for disqualification of the bid.

1.05 BONDS AND CONTRACT: If the undersigned is notified of bid acceptance, it agrees to furnish required bonds as indicated in the Instructions to Bidders.

1.06 COMPLETION OF WORK: In submitting a bid, the undersigned agrees to execute the Owner-Contractor Agreement in the form included in the Contract Documents and to complete its Work as required by the Contract Documents.

NOTE A: The wording of the Bid Form shall be used throughout, without change, alteration, or addition. Any change may cause it to be rejected.

NOTE B: Bidder is cautioned to bid only on the Brands or Standards specified.

NOTE C: If there is an inconsistency or conflict in the Bid amount, the lowest amount shall control, whether expressed in numbers or words.

2.01 BID:

Include the cost of all labor and material for the contract listed below. Bidder is to fill in all blanks related to the Bid Package for which a bid is being submitted. If no bid is submitted for an item, leave the item blank or insert "NO BID" in the blank. For alternate items, indicate whether the amount stated is in addition to or a deduction from the base bid amount (if there is no indication whether the amount for an alternate is an addition or a deduction, the amount shall be a deduction).

2.02 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Lump Sum – All Work, but not including alternates.

_____ Dollars ($ _____)
(Words) (Figures)

3.01 INSTRUCTIONS FOR SIGNING

A. The person signing for a sole proprietorship must be the sole proprietor or his authorized representative. The name of the sole proprietor must be shown below.

B. The person signing for a partnership must be a partner or his authorized representative.

C. The person signing for a corporation must be the president, vice president or other authorized representative; or he must show authority, by affidavit, to bind the corporation.

D. The person signing for some other legal entity must show his authority, by affidavit, to bind the legal entity.

4.01 BIDDER CERTIFICATIONS. The Bidder hereby acknowledges that the following representations in this bid are material and not mere recitals:

1. **The Bidder acknowledges that this is a public project involving public funds, and that the Owner expects and requires that each successful Bidder adhere to the highest ethical and performance standards. The Bidder by submitting its bid pledges and agrees that (a) it will act at all times with absolute integrity and truthfulness in its dealings with the Owner and the Design Professional, (b) it will use its best efforts to cooperate with the Owner and the Design Professional and all other Contractors on the Project and at all times will act with professionalism and dignity in its dealings with the Owner, Design Professional and other Contractors, (c) it will assign only competent supervisors and workers to the Project, each of whom is fully qualified to perform the tasks that are assigned to him/her, and (d) it has read, understands and will comply with the terms of the Contract Documents.**

2. The Bidder represents that it has had a competent person carefully and diligently review each part of the Contract Documents, including any Divisions of the Specifications and parts of the Drawings that are not directly applicable to the Work on which the Bidder is submitting its bid. By submitting its bid, each Bidder represents and agrees, based upon its careful and diligent review of the Contract Documents, that it is not aware of any conflicts, inconsistencies, errors or omissions in the Contract Documents for which it has not notified the Design Professional in writing at least seven (7) days prior to the bid opening. If there are any such conflicts, inconsistencies, errors or omissions in the Contract Documents, the Bidder (i) will provide the labor, equipment or materials

of the better quality or greater quantity of Work; and/or (ii) will comply with the more stringent requirements. The Bidder will not be entitled to any additional compensation for any conflicts, inconsistencies, errors or omissions that would have been discovered by such careful and diligent review, unless it has given such prior written notice to Design Professional.

3. The Bidder represents that it has had a competent person carefully and diligently inspect and examine the entire site for the Project and the surrounding area, including all parts of the site applicable to the Work for which it is submitting its bid, and carefully correlate the results of the inspection with the requirements of the Contract Documents. The Bidder agrees that its bid shall include all costs attributable to site and surrounding area conditions that would have been discovered by such careful and diligent inspection and examination of the site and the surrounding area, and the Bidder shall not be entitled to any Change Order, additional compensation, or additional time on account of conditions that could have been discovered by such an investigation.

4. The Bidder represents, understands and agrees that a) the Claim procedures in the General Conditions as modified for the Project are material terms of the Contract Documents, b) if it has a Claim, it will have its personnel provide complete and accurate information to complete and submit the Statement of Claim form on a timely basis, c) the proper completion and timely submission of a Statement of Claim form is a condition precedent to any change in the Contract Sum or the Contract Time(s), and d) the proper and timely submission of the Statement of Claim form provides the Owner and the Design Professional with necessary information so that the Owner may investigate the Claim and mitigate its damages.

5. The Bidder represents that the bid contains the name of every person interested therein and is based upon the Standards specified by the Contract Documents.

6. The Bidder and each person signing on behalf of the Bidder certifies, and in the case of a bid by joint venture, each member thereof certifies as to such member's entity, under penalty of perjury, that to the best of the undersigned's knowledge and belief: (a) the Base Bid, any Unit Prices and any Alternate bid in the bid have been arrived at independently without collusion, consultation, communication or agreement, or for the purpose of restricting competition as to any matter relating to such Base Bid, Unit Prices or Alternate bid with any other Bidder; (b) unless otherwise required by law, the Base Bid, any Unit Prices and any Alternate bid in the bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to the bid opening, directly or indirectly, to any other Bidder who would have any interest in the Base Bid, Unit Prices or Alternate bid; (c) no attempt has been made or will be made by the Bidder to induce any other Person to submit or not to submit a bid for the purpose of restricting competition; and (d) the statements made in this Bid Form are true and correct.

7. The Bidder will execute the form of Owner/Contractor Agreement in the form included with the Contract Documents, if a Contract is awarded on the basis of this bid, and if the Bidder does not execute the Contract Form for any reason, other than as authorized by law, the Bidder and the Bidder's Surety are liable to the Owner.

8. The Bidder certifies that the upon the award of a Contract, the Contractor will ensure that all of the Contractor's employees, while working on the Project site, will not purchase, transfer, use or possess illegal drugs or alcohol or abuse prescription drugs in any way.

9. The Bidder agrees to furnish any information requested by the Design Professional or the Owner's authorized representative to evaluate that the Bidder has submitted the lowest responsible bid and that the bid is responsive to the specifications.

10. The Bidder certifies that it has no unresolved findings for recovery issued by the Auditor of State.

11. The Bidder certifies that it is aware of and in compliance with the requirements of Ohio Revised Code Section 3517.13 regarding campaign contributions.

12. The Bidder further states that it is a duly licensed contractor, for the type of work proposed, in accordance with the local requirements, and that all fees, permits, etc., pursuant to submitting this Bid have been paid in full.

LEGAL NAME OF BIDDER: _____

BIDDER IS (check one): __ sole proprietor __ partnership __ corporation __ other legal entity

NAME & TITLE OF PERSON LEGALLY AUTHORIZED TO BIND BIDDER TO A CONTRACT:

_____
Name Title

DATE SIGNED: _____

SIGNATURE: _____

ADDRESS: _____

_____

TELEPHONE: _____

FAX: _____

FEDERAL TAX I.D. # _____

When the Bidder is a partnership or a joint venture, state name and address of each partner in the partnership or participant in the joint venture below:

_____ _____

_____ _____
Name

_____
Address

_____ _____

_____ _____
Name

_____
Address

_____ _____

_____ _____
Name

_____
Address

_____ _____

_____ _____

Name

_____
Address

_____ _____

_____ _____
Name

_____
Address

END OF SECTION

HEALTH SCIENCE BUILDING ADDITION
EARLY SITE AND RESTROOM PROJECT
233448.00

CONTRACTOR'S QUALIFICATION STATEMENT

SUBMITTED TO: Upper Valley Career Center Board of Education
Attn: Patrick Gibson, Director of Business Operations
8811 Career Drive
Piqua, Ohio 45356

NAME OF PROJECT: _____

SUBMITTED BY: _____

CONTRACTOR PROJECT CONTACT NAME: _____

ADDRESS: _____

EMAIL: _____

PHONE: _____

PRINCIPAL OFFICE: _____

☐ Corporation
☐ Partnership
☐ Individual
☐ Joint Venture
☐ Other

#	Question	Response
1 - Organization		
1.1	How many years has your organization been in business as a Contractor in the construction industry?	
1.2	How many years has your organization been in business under its present business name?	
1.2.1	Under what other or former names has your organization operated?	
1.3	Is your organization a corporation? If yes, answer #1.3.1 – 1.3.6	
1.3.1	Date of incorporation	

1.3.2	State of incorporation	
1.3.3	President's name	
1.3.4	Vice President's name(s)	
1.3.5	Secretary's name	
1.3.6	Treasurer's name	
1.4	Is your organization a partnership? If yes, answer #1.4.1 – 1.4.3	
1.4.1	Date of organization	
1.4.2	Type of partnership (if applicable)	
1.4.3	Name(s) of general partner(s)	
1.5	Is your organization individually owned? If yes, answer #1.5.1 – 1.5.2	
1.5.1	Date of organization	
1.5.2	Name of owner	

1.6	If the form of your organization is other than those listed above, describe it and name the principals.	
2 - Licensing		
2.1	List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.	
2.2	List jurisdictions in which your organization's partnership or trade name is filed.	
2.3	List any suspension or revocations of any professional license of any director, officer, owner, or managerial employees of your organization, to the extent that any work to be performed on this Project is within the field of such licensed profession.	
3 - Financing: After bid opening, within 24 hours of a request made by the Owner or Design Professional, the apparent low Bidder and any other Bidder must submit additional financial information as requested.		
4 - References		

4.1	Trade References	
4.2	Bank References	
4.3	Surety – name of bonding company	
4.4	Surety – name and address of agent	
5 – Claims and Organization History		
5.1	Attach your organization's record for both resolved and unresolved findings of the Auditor of the State of Ohio for recovery as defined in Section 9.24 of the Ohio Revised Code. If none, state "none".	
5.2	Does your organization participate in a drug-free workplace program?	

5.3	Has your organization ever failed to complete any work or failed to complete any work by the substantial completion date, final completion date, or in a timely manner? If yes, attach details.	
5.4	Within the last five years, has your organization or any of its officers prosecuted any Claims, had any Claims prosecuted against it or them, or been involved in or is currently involved in any mediation or arbitration proceedings or lawsuits related to any construction project, or has any judgments or awards outstanding against it or them? If the answer is yes, please attach the details for each Claim, including the names and telephone numbers of the persons who are parties, the amount of the Claim, the type of Claim and basis for the Claim, and the outcome. Note: As used in this document "Claim" means a Claim initiated under the Contract Documents for a project or relating to the Work for a project, including Claims made against performance bonds secured by the Contractor on other construction projects.	
5.5	Within the last five years, has your organization received a citation, notice of violation, or other form of written violation relating to federal, state, and local laws, rules and regulations including but not limited to the Occupational Safety and Health Act, the Ohio Prevailing Wage laws, and Ohio ethics laws? If yes, please attach details and reason(s) for each instance and the outcome including any fines or penalties imposed.	
5.6	Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? If the answer is yes, please attach details for each instance, including the names and telephone numbers of the persons who are parties to the contract, and the reason(s) the contract was not completed.	
5.7	If any of the following members of your organization's management – president, chairman of the board, or any director – operates or has operated another construction company during the last five years, identify the member of management and the name of the construction company.	
5.8	If your organization is operating under a trade name registration with the Secretary of State for the State of Ohio, identify the entity for which the trade name is registered. If none, state "none."	

5.9	If your organization is a division or wholly-owned subsidiary of another entity or has another relationship with another entity, identify the entity of which it is a division or wholly-owned subsidiary or with which it has another relationship and also identify the nature of the relationship. If none, state "not applicable."	
5.10	List any projects within the previous five years where a public entity determined that your organization was not a responsible bidder, including the name of the public entity, the reasons given by the public entity, and an explanation thereof.	
6 - Experience		
6.1	List the categories of work that your organization normally performs with its own forces	
6.2	State average annual amount of construction work your organization has performed during the last five years	
6.3	State total amount of work in progress and under contract	
6.4	Describe the size and experience of your organization's work force and your equipment and facilities, in relation to your organization's ability to complete the Project successfully and on time.	

6.5	In the chart below, provide the following information for each contract your organization has had during the last five years, including current contracts, where the Contract Sum is/was 50% or more of the bid amount for this Project, including add alternates. Include details regarding timeliness of performance and quality of work. List the original contract price for each project, the amount of any change orders or cost overruns on each, and the reasons for the change orders or cost overruns, and your organization's record for complying with and meeting completion deadlines on construction projects. If there are more than ten of these contracts only provide information on the most recent ten contracts, including current contracts.

Project/Scope of Work	Original Contract Sum	Amount of any change orders or cost overruns and reasons	Completion deadlines met?	Owner's Contact & Telephone Number	Engineer's or Architect's Representative Name & Telephone Number

Project/Scope of Work	Original Contract Sum	Amount of any change orders or cost overruns and reasons	Completion deadlines met?	Owner's Contact & Telephone Number	Engineer's or Architect's Representative Name & Telephone Number

Project/Scope of Work	Original Contract Sum	Amount of any change orders or cost overruns and reasons	Completion deadlines met?	Owner's Contact & Telephone Number	Engineer's or Architect's Representative Name & Telephone Number

6.6 In the chart below, provide the following information for each project your organization has had during the last five years, which your organization believes is of comparable or greater size and complexity than the Owner's project. If there are more than five of these projects, only provide information on the most recent five projects, including current projects.

Project and Scope of Work	Contract Sum	Owner's Contact & Telephone Number	Engineer's or Architect's Representative Name & Telephone Number

6.7 In the chart below, list the construction education, training and construction experience for each person who will fill a management role on the Project, including without limitation the Project Executive, Project Engineer, Project Manager, and Project Superintendent. For each person listed, include with the other information, the last three projects on which the person worked and the name and telephone number of the design professional and the Owner. Attach a separate sheet if necessary, identifying the question number.

Name/Role	Education and Training	Project #1, Owner & A/E Contact, Telephone Number	Project #2, Owner & A/E Contact, Telephone Number	Project #3, Owner & A/E Contact, Telephone Number

6.8	In the chart below, list construction projects your organization has in progress with an original Contract Sum of more than $100,000.00, giving the name of project, owner and its telephone number, design professional and its telephone number, contract amount, percent complete and scheduled completion date. Attach a separate sheet if necessary, identifying the question number.

Project/Scope of Work	Contract Sum	Scheduled Completion Date	% Complete	Owner's Contact & Telephone Number	Engineer's or Architect's Representative Name & Telephone Number

Additional Criteria. The Owner, in its discretion, reserves the right to request additional information and documentation relating to the foregoing and related to any of the criteria listed in the Bidding and Contract Documents after the bid opening. The Owner may consider such information and documentation in determining which bidder is the lowest responsible. The Owner, in its discretion, may consider and give such weight to any and all criteria as it deems appropriate.

Certification. The undersigned certifies for the reliance of the Owner that after diligent investigation, to the best of the undersigned's belief, the information provided with this Contractor's Qualification Statement is true, accurate and not misleading.

SIGNATURE_____

Dated at this ____ day of _____, 20__.

Name of Organization: _____

By: _____[PRINT NAME]

Signature: _____

Title: _____

_____, being duly sworn, deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading. The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

Subscribed and sworn before me this _____ day of _____ 20__.

_____
Notary Public

My Commission Expires: _____

SEAL

OWNER-CONTRACTOR AGREEMENT

Owner:
Upper Valley Career Center
Board of Education
8811 Career Drive
Piqua, Ohio 45356

Contractor:
_____
_____
_____

Contractor's Representative:
_____

Owner's Representative(s):
Patrick Gibson, Director of Business Operations

Project:
Addition and Renovation Project

Scope: General Contractor

This document is an agreement between the Owner and the Contractor for the Work described in the Contract Documents related to the Scope identified above for the Project defined above and is effective as of the date the Agreement is signed by the Owner).

It is anticipated that the Project will be funded, in part, through federal funds made available by the CTE Construction Facilities Expansion Grant through the American Rescue Plan Act (ARPA) funding and will be subject to compliance with the requirements for ARPA funded projects. The CTE Construction Facilities Expansion Grant funds must be obligated by September 30, 2024 and all work on the Project must be completed prior to September 30, 2026.

The Contractor must comply with related requirements and assist Owner with such compliance. The Uniform Guidance Appendix II to Part 200 Contract Provisions for Non-Federal Entity Contracts Under Federal Awards shall apply and are attached hereto as Exhibit K. The Owner reserves the right to revise the Contract Documents as it deems necessary to comply with the ARPA funding requirements.

The Ohio Facilities Construction Commission will administer the CTE Construction Facilities Expansion Grant. Accordingly, the Project must comply with the Ohio School Design Manual and the minimum design criteria for school construction projects in Ohio contained therein.

The Owner and the Contractor agree as set forth in the following sections:

1. CONTRACT DOCUMENTS. The Contract Documents consist of the following documents:

A. Legal Notice;
B. Instructions to Bidders;
C. Bid Form and Contractor's Qualification Statement;
D. Owner-Contractor Agreement;
E. General Conditions of the Contract for Construction (AIA Document A201-2017), as modified;
F. Drawings and Specifications included in the Project Manual dated **3.22.2024** prepared by Levin Porter Architects, Inc.;
G. Bid Guaranty and Contract Bond;
H. Addenda issued;
I. Contractor's Personal Property Tax Affidavit (O.R.C. 5719.042);
J. Statement of Claim Form; and
K. Modifications issued after the execution of the Agreement, including:
   i. A Change Order;

ii. A Work Change Directive; or,

iii. A written order for a minor change of the Work issued by the Design Professional in accordance with the General Conditions.

1.1. Notwithstanding anything in the Contract Documents to the contrary, in the event of any inconsistency, the provisions of this Agreement shall control over any other Contract Document, proposal, document, or other attachment. In the event inconsistencies, conflicts, or ambiguities between or among the Contract Documents are discovered after execution of the Agreement, Contractor shall provide the better quality or greater quantity of Work or comply with the more stringent requirements.

1.2. Contractor will use the State of Ohio Subcontract Form for all subcontracted Work, in accordance with ORC 153.503(C) and OAC 153:1-3-02.

Note: **Non-Contract Documents**. The following are the reports and tests of subsurface conditions at or contiguous to the Site, if any, that the Design Professional has used in preparing the Contract Documents. These are not Contract Documents. Geotechnical data is not a warranty of subsurface conditions and is not to be relied upon as a complete representation of all possible soil conditions. Neither Owner nor its consultants warrant the accuracy of the geotechnical data. It is possible that there may be other reports, and/or tests of subsurface conditions at or contiguous to the Site not prepared by or on behalf of Owner. The Owner makes no representation about such reports and/or tests, assuming they exist. Additional information, if needed by Contractor for geotechnical data or site survey, shall be obtained by the Contractor at no additional cost to Owner. The General Conditions, as modified, contain additional terms related to these reports and tests.

Contractor may rely upon the general accuracy of the “technical data” contained in such reports and drawings listed below, and except for such reliance on “technical data,” Contractor shall not rely upon or make any claim against Owner or Architect with respect to: (1) the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or (2) other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or (3) any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information. For example, all interpolations and extrapolations of data performed by Contractor to estimate locations or quantities of subsurface strata are independent factual assumptions which Owner does not warrant. (None if none are listed.)

_____

Note: **Non-Contract Documents**. The following are those reports and drawings related to any Hazardous Conditions at the Site, if any. These are not Contract Documents. The General Conditions, as modified, contain additional terms related to these reports and drawings. (None if none are listed.)

_____

2. DESIGN PROFESSIONAL RELATIONSHIP. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Design Professional and the Contractor or any Subcontractor or Material Supplier to the Project. The Design Professional, however, shall be entitled to performance of the obligations of the Contractor intended for its benefit and to enforcement of such obligations, but nothing contained herein shall be deemed to give the Contractor or any third party any claim or right of action against the Design Professional that does not otherwise exist without regard to this Contract. The Contractor and its Subcontractors shall not be deemed to be beneficiaries of any of the acts or services of the Design Professional that are performed for the sole benefit of the Owner. Except as

otherwise set forth herein, the Contractor shall communicate with the Owner through the Design Professional. Contractor shall copy Owner on all communications that may result in a request for an adjustment to the Contract Time or Contract Sum.

2.1. The Design Professional is:

Levin Porter Architects, Inc.
Mark Wiseman, AIA, LEED AP
3011 Newmark Drive
Miamisburg, Ohio 45342

Any references to the "Architect" or the "Engineer" in the Contract Documents are deemed to refer to the Design Professional identified herein.

3. TIME FOR COMPLETION ("CONTRACT TIME") AND PROJECT COORDINATION.

3.1. DATE OF COMMENCEMENT. The date of commencement of the Work shall be the date identified as the "Date of Commencement" in the Notice to Proceed issued by the Owner, or by the Owner through the Design Professional, to the Contractor, or if there is no Notice to Proceed, the Effective Date of this Agreement.

3.2. DATE OF SUBSTANTIAL COMPLETION. The Project and Work for the Project consists of all labor, materials, equipment, and services necessary for construction of the Project, all in accordance with the Drawings and Specifications prepared by the Design Professional. The Contractor shall achieve Substantial Completion of its Work on the Project, as defined in the General Conditions, within **102 calendar days** of the Date of Commencement / on or before **August, 2nd, 2024** ("Date of Substantial Completion").

3.2.1. DATE OF FINAL COMPLETION. The Contractor shall achieve Final Completion of its Work on the Project, as defined in the General Conditions, within **7 calendar days** of the Date of Substantial Completion ("Date of Final Completion").

3.2.2. UTILITIES AND OPERATIONS. Contractor shall not interrupt utilities to facilities or existing operations without prior written notice and approval by Owner.

3.3. CONSTRUCTION SCHEDULE. The Construction Schedule shall be developed by the Contractor as provided in the Contract Documents.

3.4. LIQUIDATED DAMAGES. If the Contractor does not have its Work on the Project Substantially Complete by the specified Date for Substantial Completion or if the Contractor does not have its Work on the Project Finally Complete by the specified Date for Final Completion, the Contractor shall pay the Owner (and the Owner may set off from sums coming due the Contractor) Liquidated Damages in the per diem amount(s) identified in the chart below:

Contract Sum	Liquidated Damages Per Day for Failure to Timely Achieve:	
	Substantial Completion	Final Completion
$1,000,000.00 or less	$500	$125
$1,000,000.01 to $2,000,000.00	$700	$250
$2,000,000.01 to $5,000,000.00	$1,000	$500
$5,000,000.01 to $10,000,000.00	$2,000	$1,000
$10,000,000.01 to $20,000,000.00	$4,000	$1,250

The Contractor acknowledges that such amounts of Liquidated Damages represent a reasonable estimate of the actual damages for loss of or interference with the intended use of the Project that the Owner would incur if the Contractor's Work is not Substantially Complete by its Date for Substantial Completion or Finally Complete by the required Date for Final Completion, or both. Any waiver of consequential damages shall not preclude the Owner from recovering Liquidated Damages.

3.4.1. Nothing in this Section shall be construed to diminish Owner's indemnity rights pursuant to this Agreement nor shall it preclude the Owner from recovering its actual damages from the Contractor for third-party claims against the Owner or for damages not attributable to delay.

3.5. INITIAL DECISION MAKER. The Initial Decision Maker renders initial decisions on Claims in accordance with the claims process set forth in the General Conditions. The Initial Decision Maker shall be the Design Professional, unless a different Initial Decision Maker is identified below:

3.6. Time is of the Essence for the Contractor's performance of the Work.

4. CONTRACT SUM (also called Contract Price). The Contract Sum to be paid by the Owner to the Contractor, as provided herein, for the satisfactory performance and completion of the Work and all of the duties, obligations, and responsibilities of the Contractor under this Agreement and the other Contract Documents is _____ Dollars ($_____), subject to adjustment as set forth in the Contract Documents. The Contract Sum includes Allowances, Accepted Alternates, and all federal, state, county, municipal, and other taxes imposed by law, including but not limited to any sales, use, commercial activity, and personal property taxes payable by or levied against the Contractor on account of the Work or the materials incorporated into the Work. The Contractor will pay any such taxes. The Contract Sum includes the following:

4.1. Base Bid Amount: $_____ (Lump Sum Bid);

4.2. Accepted Alternates, included in the Contract Sum:

Alternate No.	Description	Amount
____	_____	$____

4.3. Allowances included in the Contract Sum:

Allowance Description	Amount
_____	$_____
_____	$_____

4.4. Unit Prices. If directed by the Design Professional, such Work will be paid for in accordance with the Unit Prices proposed and identified below:

4.5. If after Substantial Completion of its Work, the Contractor fails to submit its final payment application with all the documents required to be submitted with such application within ninety (90) days after written notice to do so from the Owner and without prejudice to any other rights and remedies the Owner may have available to it, the balance of the Contract Sum shall become the Owner's sole and exclusive property, and the Contractor shall have no further interest in or right to such balance.

5. RETAINAGE. Retainage applicable to the Contract will be withheld in accordance with Ohio Revised Code Sections 153.12, .13, and .14 and the Modified General Conditions.

5.1. RETAINAGE FOR LABOR. Payments for labor incorporated into the Work will be at the rate of 92% of the amount set forth in Contractor's payment application and approved by Owner until the Work is 50% complete, unless the parties agree otherwise. When the Work is 50% complete, the payment for labor incorporated into the Work will be at the rate of 100% of the amount set forth in Contractor's payment application and approved by Owner.

5.2. RETAINAGE FOR MATERIALS AND EQUIPMENT. Payments for materials and equipment will be at the rate of 92% of the invoice cost of materials and equipment delivered to the Project site or other storage site approved by Owner. The balance of the invoice cost will be payable when the materials or equipment are incorporated into the Work. Incorporated into the Work means such materials and equipment are installed and conform to the requirements of the Contract Documents. When payment is made on account of materials or equipment not yet incorporated into the Project, such materials and equipment will become the property of Owner; provided that if such materials or equipment are stolen, destroyed, or damaged before being fully incorporated into the Project, Contractor shall be required to replace them at its expense.

6. [NOT USED.]

7. GENERAL.

7.1. MODIFICATION. No modification or waiver of any of the terms of this Agreement or of any other Contract Documents shall be effective against a party unless set forth in writing and signed by or on behalf of a party. In the case of the Owner, the person executing the modification or waiver must be duly authorized by action of the Owner's governing body. Under no circumstances will forbearance, including the failure or repeated failure to insist upon compliance with the terms of the Contract Documents, constitute the waiver or modification of any such terms. The parties acknowledge and agree that it may not rely upon common law waiver or estoppel principles to establish an alleged waiver or modification of this Agreement or the Contract Documents and rather that this Agreement and the Contract Documents can only be waived or modified pursuant to this paragraph. The parties acknowledge that no person has authority to modify this Agreement or the other Contract Documents or to waive any of its or their terms, except as expressly provided in this Paragraph.

7.2. ASSIGNMENT. Contractor may not assign this Agreement without the written consent of Owner, which Owner may withhold in its sole discretion.

7.3. THIRD PARTIES. Nothing contained in the Contract Documents shall create a contractual relationship with or a cause of action in favor of a third party against either Owner of Contractor. However, it is understood that the Owner is an intended third-party beneficiary of Contractor's agreements with its Suppliers, and Subcontractors, and Suppliers' and Subcontractors' agreements with their Sub-Suppliers, and Sub-Subcontractors. Contractor shall incorporate the obligations of this Agreement into its respective agreements and subcontracts.

7.4. LAW AND JURISDICTION. All questions regarding the validity, intention, or meaning of this Agreement or any modifications of it relating to the rights and obligations of the parties shall be construed and resolved under the laws of the State of Ohio. Any suit, which may be brought to enforce any provision of this Agreement or any remedy with respect hereto, shall be brought in the Common Pleas Court for the county in which the Project is located and each party hereby expressly consents to the exclusive jurisdiction of such court. Each party waives its right to remove any such suit to federal court.

7.5. STATUTE OF LIMITATIONS. Regardless of any provision to the contrary, the statute of limitations with respect to defective or non-conforming Work shall not commence until Substantial Completion or until the discovery of the defective or non-conforming Work by the Owner, whichever is later.

7.6. CONSTRUCTION. The parties acknowledge that each party has reviewed this Agreement and the other Contract Documents and has voluntarily entered into this Agreement. Accordingly, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement, the other Contract Documents, or any amendments or exhibits to it or them.

7.7. APPROVALS. Except as expressly provided herein, the approvals and determinations of Owner will be subject to the sole discretion of Owner and will be valid and binding on the Contractor, provided only that they be made in good faith, i.e., honestly. If Contractor challenges any such approval or determination, Contractor bears the burden of proving by clear and convincing evidence that it was not made in good faith.

7.8. PARTIAL INVALIDITY. If any term or provision of this Agreement is found to be illegal, unenforceable, or in violation of any laws, statutes, ordinances, or regulations of any public authority having jurisdiction, then, notwithstanding such term or provision, this Agreement will remain in full force and effect and such term will be deemed stricken; provided this Agreement will be interpreted, when possible, so as to reflect the intentions of the parties as indicated by any such stricken term or provision.

7.9. COMPLIANCE WITH LAWS AND REGULATIONS. The Contractor, at its expense, will comply with all applicable federal, state, and local laws, rules, and regulations applicable to the Work, including but not limited to Sections 153.59 and 153.60 of the Ohio Revised Code, which prohibit discrimination in the hiring and treatment of employees, with respect to which the Contractor agrees to comply and to require its subcontractors to comply.

7.10. PROJECT SAFETY. Contractor must follow all applicable safety and health regulations during the progress of the Project and monitor all of its employees and its subcontractors for compliance with such safety and health regulations. In undertaking the responsibilities set forth in this section, Contractor does not assume any duty of responsibility to the employees of any Subcontractor or supplier, regardless of tier. Owner assumes no responsibility for the development, review, or implementation of any project safety plan or for Project safety and has no authority to direct the means and methods of Contractor.

7.11. EQUAL OPPORTUNITY. Contractor will not, and it will ensure that its Subcontractors, regardless of tier, do not, discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. Such action includes but is not limited to the following: employment, upgrading, demotion, transfer, recruitment or recruiting advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of nondiscrimination. Contractor is responsible to ensure that each of its Subcontractors, regardless of tier, states in all solicitations or advertisements for employees placed by them or on their behalf that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.

7.12. NO FINDINGS FOR RECOVERY. The Contractor represents that the Contractor is not subject to a finding for recovery under Section 9.24, Ohio Revised Code, or that the Contractor has taken the appropriate remedial steps required under Section 9.24, Ohio Revised Code, or otherwise qualifies under this section. If this representation and warranty is found to be false, the Contract is void, and Contractor will immediately repay Owner any funds paid to Contractor under this Contract.

7.13. NON-DISCRIMINATION. Contractor agrees:

.1 That in the hiring of employees for the performance of Work under this Agreement or in any subcontract, neither the Contractor, subcontractor, or any person acting on behalf of either of them, shall by reason of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color discriminate against any citizen of the state in the employment of labor or workers who are qualified and available to perform the Work to which the employment relates.

.2 That neither the Contractor, subcontractor, nor any person acting on behalf of either of them shall, in any manner, discriminate against or intimidate any employee hired for the performance of Work under this Agreement on account of race, creed, sex, disability as defined in Section 4112.01 of the Ohio Revised Code, or color.

.3 That there shall be deducted from the amount payable to the Contractor by the Owner under this Agreement a forfeiture of twenty-five dollars ($25.00) as required by Ohio Revised Code Section 153.60 for each person who is discriminated against or intimidated in violation of this Agreement.

.4 That this Agreement may be canceled or terminated by the Owner and all money to become due hereunder may be forfeited for a second or subsequent violation of the terms of this section of this Agreement.

7.14. ETHICS. By signing and entering into this agreement with the Owner, the Contractor represents that it is familiar with all applicable ethics law requirements, including without limitation Sections 102.04 and 3517.13 of the Ohio Revised Code, and certifies that it is in compliance with such requirements. The Contractor understands that failure to comply with the ethics laws is, in itself, grounds for termination of this contract and may result in the loss of other contracts with the Owner.

7.15. JOB MEETINGS. The Contractor or one of its representatives with authority to bind the Contractor will attend all job meetings. The Owner anticipates that job meetings will be scheduled on a bi-weekly basis during construction or as needed. The Contractor will ensure that its Subcontractors also hold regular job meetings at which safety issues and job matters are discussed as these relate to the Work being performed. Job meetings include, but are not limited to, pre-construction meetings, weekly job meetings, weekly safety tool box meetings, and monthly safety meetings.

7.16. PROPERTY TAX AFFIDAVIT. The Contractor's affidavit given under Section 5719.024, Ohio Revised Code, is incorporated herein.

7.17. WARRANTIES. Notwithstanding anything to the contrary in the Contract Documents, including the Project Manual, Drawings, and Specifications, no warranties by Contractor shall be limited to any time shorter than the statute of limitations for written contracts in Ohio.

7.18. ENTIRE AGREEMENT. This Agreement and the other Contract Documents constitute the entire agreement among the parties with respect to their subject matter and will supersede all prior and contemporaneous, oral or written, agreements, negotiations, communications, representations, and understandings with respect to such subject matter, and no person is justified in relying on such agreements, negotiations, communications, representations, or understandings.

7.19. EXHIBITS. Exhibits to this Agreement include:

Exhibit A: Contract Bond

Exhibit B: Sales and Use Tax Construction Contract Exemption Certificate

Exhibit C: Statement of Claim Form

Exhibit D: Design Professional’s Certificate of Substantial Completion

Exhibit E: Contractor's Affidavit of Payment of Amounts Withheld

Exhibit F: Contractor Waiver and Release Affidavit

Exhibit G: Subcontractors/Suppliers Waiver and Release Affidavit

Exhibit H: Contractor Final Lien Waiver and Release Affidavit

Exhibit I: Subcontractor/Suppliers Final Lien and Release Affidavit

Exhibit J: Contractor's Payment Application Checklist

Exhibit K: The Uniform Guidance Appendix II to Part 200 Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

However, in the event of any inconsistency, the provisions of this Agreement control over any proposal, document, or other attachment.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their properly authorized representatives and agree that this Agreement is effective as of the date first set forth above.

Owner: **UPPER VALLEY CAREER CENTER BOARD OF EDUCATION**	Contractor: _____
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

CERTIFICATE

(Section 5705.41, R.C.)

The undersigned, Fiscal Officer of the Owner, hereby certifies in connection with the Agreement to which this Certificate is attached that the amount required to meet the obligations under the contract, obligation, or expenditure for the services described in the attached agreement, has been lawfully appropriated for the purpose, and is in the treasury or in process of collection to the credit of an appropriate fund, free from any outstanding obligation or encumbrance.

DATED: _____

_____
Fiscal Officer

(ORC Section 5705.412)

The undersigned Treasurer and President of the Board of Education of the Upper Valley Career Center Board of Education, and the Superintendent of the Upper Valley Career Center, hereby certify that the District has in effect for the term of the contract the authorization to levy taxes including the renewal or replacement of existing levies which, when combined with the estimated revenue from all other sources available to the District at the time of this certification, are sufficient to provide the operating revenues necessary to enable the district to maintain all personnel and programs for all the days set forth in its adopted school calendars for the current fiscal year and for a number of days in succeeding fiscal years equal to the number of days instruction was held or is scheduled for the current fiscal year.

Dated: _____

By: _____
Anthony Fraley, Treasurer
Upper Valley Career Center Board of Education

By: _____
Jason Haak, Superintendent
Upper Valley Career Center

By: _____
Lee Harmon, President
Upper Valley Career Center Board of Education

CONTRACTOR'S PERSONAL PROPERTY TAX AFFIDAVIT
(O.R.C. § 5719.042)

State of Ohio
County of _____, ss:

_____, being first duly sworn, deposes and says that he is the
(Name)

_____ of _____ with offices located at
(Title) (Contractor)

_____, and as its duly
(Address of Contractor)

authorized representative, states that effective this _____ day of _____, 20___,

_____
(Name of Contractor)

( ) is charged with delinquent personal property taxes on the general list of personal property as set forth below:

County	Amount (include total amount penalties and interest thereon)
_____ County	$_____
_____ County	$_____
_____ County	$_____

( ) is not charged with delinquent personal property taxes on the general list of personal property in any Ohio county.

_____
(Affiant)

Sworn to and subscribed before me by the above-named affiant this _____ day of _____, 20__. The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

_____
(Notary Public)

My commission expires

_____, 20__

BID GUARANTY AND CONTRACT BOND

(O.R.C. § 153.571)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned _____ _____ ("Contractor") as principal and _____ _____ as surety are hereby held and firmly bound unto the **Upper Valley Career Center Board of Education**, as obligee in the penal sum of the dollar amount of the bid submitted by the principal to the obligee on _____, 20__, to undertake the construction of the **Early Site and Restroom Renovation Project** ("Project"). The penal sum referred to herein shall be the dollar amount of the principal's bid to the obligee, incorporating any additive or deductive Alternates made by the principal on the date referred to above to the obligee, which are accepted by the obligee. In no case shall the penal sum exceed the amount of _____ Dollars ($_____ _____). (If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's bid, including add Alternates. Alternatively, if the blank is filled in the amount stated must not be less than the full amount of the bid including add Alternates, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this _____ day of _____, 20__.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas the above named principal has submitted a bid for work on the Project.

Now, therefore, if the obligee accepts the bid of the principal and the principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the principal pays to the obligee the difference not to exceed ten percent (10%) of the penalty hereof between the amount specified in the bid and such larger amount for which the obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the principal pays to the obligee the difference not-to-exceed ten percent (10%) of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising, and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if the obligee accepts the bid of the principal and the principal within ten (10) days after the awarding of the contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein.

Now also, if the said principal shall well and faithfully do and perform the things agreed by said principal to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; and surety shall indemnify the obligee against all damage suffered by failure of the principal to perform the contract according to its provisions and in accordance with the plans, details, specifications, and bills of material therefor and to pay all lawful claims of subcontractors, materialmen, and laborers for labor performed or material furnished in carrying forward, performing, or completing the contract and surety further agrees and assents that this undertaking is for the benefit of any subcontractor, materialman, or laborer having a just claim, as well as for the obligee; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions in or to the terms of the said contract or in or to the plans or specifications therefore shall in any wise affect the obligations of said surety on its bond, and does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

Signed and sealed this _____ day of _____, 20__.

_____
PRINCIPAL

By: _____

Printed Name & Title: _____

_____
SURETY

By: _____

Printed Name & Title: _____

_____

Surety's Address: _____

_____

Surety's Telephone Number: _____

Surety's Fax Number: _____

_____
SURETY'S AGENT

Surety's Agent's Address: _____

_____

Surety's Agent's Telephone Number: _____

Surety's Agent's Fax Number: _____

NOTE: The Contract Bond form that follows is to be used ONLY by a bidder that is awarded a contract and submits a form of bid guaranty other than the combined Bid Guaranty and Contract Bond with its bid. If a bidder submits a combined Bid Guaranty and Contract Bond, then the bid guaranty becomes the contract bond when the contract is awarded.

AIA Bid Bond or Payment and Performance Bond forms are not acceptable for this Project.

CONTRACT BOND
(O.R.C. § 153.57)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned ("Contractor"), as principal, and _____, as surety, are hereby held and firmly bound unto the **Upper Valley Career Center Board of Education** ("Owner") as obligee, in the penal sum of _____ _____ Dollars ($), for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas, the above-named principal did on the _____ day of _____, 20__, enter into a contract with the Owner for construction of the **Early Site and Restroom Renovation Project** ("Project"), which said contract is made a part of this bond the same as though set forth herein:

Now, if the said Contractor shall well and faithfully do and perform the things agreed by the Contractor to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions in or to the terms of the said contract or in or to the plans or specifications therefore shall in any wise affect the obligations of said surety on its bond, and does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

Signed and sealed this _____ day of _____, 20__.

_____
(PRINCIPAL)

By: _____

Printed Name & Title: _____

_____

_____
(SURETY)

By: _____

Printed Name & Title: _____

_____

Surety's Address: _____

_____

Surety's Telephone Number: _____

Surety's Fax Number: _____

_____
NAME OF SURETY'S AGENT

Surety's Agent's Address: _____

_____

Surety's Agent's Telephone Number: _____

Surety's Agent's Fax Number: _____

STATEMENT OF CLAIM FORM

Claim No. ___ for Contractor

1. Name of Contractor: _____

2. Date written claim given:_____.

3. Contractor's representative to contact regarding the claim:

   Name:_____ Title: _____
   Telephone No. _____ (office) FAX No. _____

   E-mail: _____

4. General description of claim:

_____
_____
_____

5. Contract Documents. If the claim is based upon any part or provision in the Contract Documents, including but not limited to pages in the Drawings and/or paragraphs in the Specifications, Owner-Contractor Agreement, General Conditions or Supplementary General Conditions, state upon which parts or provisions the claim is based:

_____
_____
_____

6. Delay claims:
   6.1 Date delay commenced: _____
   6.2 Duration or expected duration of the delay, if known: _____
   6.3 Apparent cause of the delay and part of critical path affected:

_____
_____
_____

   6.4 Expected impact of the delay and recommendations for minimizing such impact:

_____
_____
_____

7. Additional compensation. Set forth in detail all additional compensation to which the Contractor believes it is entitled with respect to this claim:

_____
_____
_____

8. Instructions for Completing the Statement of Claim Form ("Instructions"). The Instructions are incorporated in this Form.

9. Truth of Claim. By submitting this claim, the Contractor and its representative certify that after conscientious and thorough review and to the best of his or her knowledge and belief a) the Contractor has complied fully with the Instructions, b) the information in this State of Claim is accurate, c) the Contractor is entitled to recover the compensation in paragraph 7, and d) the Contractor has not knowingly presented a false or fraudulent claim. The Contractor by its authorized representative must acknowledge this Statement of Claim before a notary public.

CONTRACTOR: _____

By: _____

Name and Title:_____

Date: _____

CONTRACTOR'S ACKNOWLEDGMENT

State of _____,

County of _____, ss:

_____ first being sworn, states that after conscientious and thorough review, the statements made in attached Statement of Claim Form are complete and true to the best of his or her knowledge and belief.

_____

Sworn to before me a notary public by _____ on _____ __, 20__. The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

_____
Notary Public

WHEN COMPLETED, FORWARD A COPY OF THIS NOTICE AND STATEMENT OF CLAIM FORM TO THE OWNER AND DESIGN PROFESSIONAL.

INSTRUCTIONS FOR COMPLETING THE STATEMENT OF CLAIM FORM

1. Completing the Statement of Claim Form ("Claim Form") is a material term of the Contract. The Claim Form tells the Owner and Design Professional that the Contractor is making a Claim and that they need to act promptly to mitigate the effects of the occurrence giving rise to the Claim. The Claim Form also provides them with information so that they can mitigate such effects. The Contractor acknowledges that constructive knowledge of the conditions giving rise to the Claim through job meetings, correspondence, site observations, etc. is inadequate notice, because knowledge of these conditions does not tell the Owner and Design Professional that the Contractor will be making a Claim and most often is incomplete.

2. If the space provided in the Claim Form is insufficient, the Contractor, as necessary to provide complete and detailed information, must attach pages to the Claim Form with the required information.

3. Paragraph 4. The Contractor must state what it wants, *i.e.*, time and/or compensation, and the reason why it is entitled to time and/or compensation.

4. Paragraph 5. The Contractor must identify the exact provisions of the Contract Documents it is relying on in making its Claim. For example, if the Claim is for a change in the scope of the Contractor's Work, the Contractor must identify the specific provisions of the Specifications, and the Plan sheets and details that provide the basis for the scope change.

5. Paragraph 6. This paragraph applies to delay claims, including delays that the Contractor believes result in constructive acceleration. The Contractor must identify the cause of the delay, party or parties responsible, and what the party did or did not do that caused the delay, *i.e.*, specific work activities. The Contractor acknowledges that general statements are not sufficient, and do not provide the Owner with sufficient information to exercise the remedies available to the Owner or to mitigate the effects of the delay.

   For example, if the Contractor claims a slow response time on submittals caused a delay, the Contractor must identify the specific submittals, all relevant dates, and then show on the applicable schedule, by circling or highlighting, the activities immediately affected by the delays. Also for example, if the Contractor claims it was delayed by another Contractor, the Contractor must identify the delaying Contractor, specifically what the delaying Contractor did or did not do that caused the delay, and then show the applicable schedule, by circling or highlighting, the activities immediately affected by the delays. Further by example, if the Contractor seeks an extension of time for unusually severe weather, the Contractor must submit comparative weather data along with a record of the actual weather at the job site and job site conditions.

6. Paragraph 6.4. Time is of the essence under the Contract Documents. If there is a delay, it is important to know what can be done to minimize the impact of the delay. It therefore is important that the Contractor provide specific recommendations on how to do so.

7. Paragraph 7. The Contractor must provide a specific and detailed breakdown of the additional compensation it seeks to recover. For future compensation, the Contractor shall provide its best estimate of such compensation.

8. Paragraph 8 and Acknowledgment. By submitting this Claim, the Contractor and its representative certify that after conscientious and thorough review and to the best of his or her knowledge and belief a) the Contractor has complied fully with the Instructions, b) the information in this Claim Form is accurate, c) the Contractor is entitled to recover the compensation in paragraph 7, and d) the Contractor has not knowingly presented a false or fraudulent claim. The Contractor by its authorized representative must acknowledge this Statement of Claim before a notary public.

End of Instructions

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: Early Site and Restroom Renovation Project	Contract For: General Contract
Owner: Upper Valley Career Center Board of Education	CONTRACTOR: [insert name and address]

The Design Professional hereby certifies that the Date for Substantial Completion of the Contractor's Work as set forth in the Owner-Contractor Agreement is:

August 2nd, 2024
(Insert Date for Substantial Completion of the Work)

The Design Professional hereby certifies that the Date for Substantial Completion in the Contractor's Agreement with the Owner (the "Agreement"), as extended by Change Orders and Claims submitted by the Contractor that have been Finally Resolved, as defined below, is:

1. Date for Substantial Completion in the Agreement (above): August 2nd, 2024
2. Additional days added to Date for Substantial Completion by Change Order: _____
3. Additional days added by Claims that have been Finally Resolved: _____
4. Date for Substantial Completion in the Contract Adjusted by days under No. 2 and No. 3 _____

"Finally Resolved" means that the Design Professional has made a decision (or declined to make a decision) on the Claim under the General Conditions and that any litigation regarding the Claim has been concluded.

The Design Professional certifies that the Contractor's Work to the best of the Design Professional's knowledge, information, and belief was Substantially Complete, as Substantial Completion is defined in the Contract Documents, on _____.

The Design Professional hereby certifies that the difference between (a) the Date for Substantial Completion adjusted by the days under No. 2 and No. 3 above and (b) the date the Contractor's Work was Substantially Complete is _____ days.

NOTICES OF DELAY. The Design Professional hereby certifies that all "NOTICES OF DELAY" submitted by the Contractor and described in the General Conditions are attached to this Certificate. This certification is solely for the purpose of identifying all "NOTICES OF DELAY" submitted by the Contractor and is not intended to imply that any of these NOTICES OF DELAY were properly submitted in accordance with Contract Documents or are valid.

STATEMENT OF CLAIM FORMS. The Design Professional hereby certifies that all Statement of Claim Forms described in the General Conditions and submitted by the Contractor are attached to this Certificate. This certification is solely for the purpose of identifying all Statement of Claim Forms submitted by the

Contractor and is not intended to imply that any of these Statement of Claim Forms were properly submitted in accordance with Contract Documents or are valid.

PUNCHLIST ITEMS. A list of items to be completed by the Contractor is attached to this Certificate. The failure to include items on this list does not change the responsibility of the Contractor to complete its Work in accordance with the Contract Documents. The Contractor shall complete all items on the Punchlist in accordance with the Contract Documents.

Security, maintenance, utilities, damage to the Work and insurance are the responsibility of the Owner and the Contractor based on their operations pursuant to final completion of the Work.

Copies of this Certificate were provided to the Contractor and the Owner on _____

Signature: _____

Date: _____

CONTRACTOR'S AFFIDAVIT AND CERTIFICATION WITH LIST OF SUBCONTRACTORS AND SUPPLIERS WITH ANY AMOUNTS WITHHELD

PROJECT:
Early Site and Restroom Renovation Project

CONTRACTOR:

In Support of PAYMENT APPLICATION No.: _____

For the Period Through: _____

STATE OF _____:
: SS,
COUNTY OF _____:

The undersigned after first being sworn swears that a) all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment; b) set forth below is a complete list of its Subcontractors and Suppliers; and c) set forth below is a complete description of all amounts withheld from any Subcontractor or Supplier and the reason why. Attach additional sheets if necessary.

Typed or Printed Name of Subcontractor or Supplier	Address of Subcontractor or Supplier	Telephone Number of Subcontractor or Supplier

Typed or Printed Name of Subcontractor or Supplier	Address of Subcontractor or Supplier	Telephone Number of Subcontractor or Supplier

WITHHOLDINGS FROM SUBCONTRACTORS AND/OR SUPPLIERS:

Typed or Printed Name of Subcontractor or Supplier	Amount Withheld	Reason for Withholding

Moreover, Contractor certifies that, except for as set forth immediately above, Contractor has paid all of its subcontractors and suppliers who were due to be paid with the proceeds of the prior Application for Payment and Contractor acknowledges that Owner is relying upon such certification when paying Contractor the amount asked for in the payment application that this Affidavit and Certification supports.

CONTRACTOR: [insert name]

_____

BY: _____
(Signature of authorized representative

NOTARY PUBLIC

Subscribed and sworn to before me on this date by _____ on behalf of _____. The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

_____
Signature of Notary Public

Notary Public: _____

My Commission Expires: _____

CONTRACTOR'S WAIVER & RELEASE AFFIDAVIT
("AFFIDAVIT")

Project: Early Site and Restroom Renovation Project

The undersigned hereby acknowledges receipt of payment for all Work on the Project through the date of the prior Application for Payment by the **Upper Valley Career Center Board of Education** (the "Owner") with which it has a contract for the Project.

In return for said payment, and/or pursuant to certain contractual obligations of the undersigned, the undersigned hereby waives and releases any rights it has or may have through the date of the last Application for Payment to any and all types of claims relating to the Project, including without limitation claims of payment, Mechanic's Lien, stop notice, equitable lien, labor and material bond, breach of contract or unjust enrichment, or any other claim against the Owner, for any labor, materials, or equipment the undersigned may have delivered or provided to the Project, except for any Claims the undersigned has made by properly and timely submitting a Statement of Claim form. The undersigned further certifies that this Affidavit covers claims by all contractors, subcontractors, and suppliers who may have provided any labor, material, or equipment to the Project through the undersigned or at the undersigned's request. The undersigned acknowledges that all such contractors, subcontractors, sub-subcontractors and suppliers have signed an affidavit in the form of this Affidavit releasing any and all claims against the Owner, except for any Claims the undersigned has made by properly and timely submitting a Statement of Claim form. The undersigned hereby represents and warrants that it has paid any and all welfare, pension, vacation or other contributions required to be paid on account of the employment by the undersigned of any laborers on the Project.

This Affidavit is for the benefit of, and may be relied upon by the Owner. The undersigned hereby agrees to indemnify, defend and hold harmless each of the foregoing, the Project, work of improvement, and real property from any and all claims, or liens that are or should have been released in accordance with this Affidavit.

_____
Company Name

_____
Authorized Signature (Company Officer)

_____
Title

_____
Date

State of: _____ County of _____

Subscribed and sworn to before me this _____ day of _____. The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

Notary Public: _____

My Commission Expires: _____

**SUBCONTRACTORS, SUPPLIERS
WAIVER & RELEASE AFFIDAVIT
("AFFIDAVIT")**

Project: Early Site and Restroom Renovation Project

The undersigned hereby acknowledges receipt of payment for all Work on the Project through the date of the prior Application for Payment by the Contractor ("Contractor") with which it has a contract.

In return for said payment, and/or pursuant to certain contractual obligations of the undersigned, the undersigned hereby waives and releases any rights it has or may have through the date of the Contractor's last Application for Payment and to any and all types of claims relating to the Project, including without limitation claims of payment, Mechanic's Lien, stop notice, equitable lien, labor and material bond, breach of contract or unjust enrichment, or any other claim against the Contractor, the Contractor's surety, and/or the **Upper Valley Career Center Board of Education** (the "Owner"), for any labor, materials, or equipment the undersigned may have delivered or provided to the Project, except for any Claims the undersigned has made by properly and timely submitting a Statement of Claim form, a copy of which has been delivered to the Owner. The undersigned further certifies that this Affidavit covers claims by all contractors, subcontractors and suppliers through the date of the Contractor's last Application for Payment who may have provided any labor, material, or equipment to the Project through the undersigned or at the undersigned's request. The undersigned acknowledges that all such contractors, subcontractors, sub-subcontractors and suppliers have signed an affidavit in the form of this Affidavit releasing any and all claims against the Contractor, the Contractor's surety, and/or the Owner, except for any Claims made by properly and timely submitting a Statement of Claim form a copy of which has been delivered to the Owner. The undersigned hereby represents and warrants that it has paid any and all welfare, pension, vacation or other contributions required to be paid on account of the employment by the undersigned of any laborers on the Project.

The undersigned agrees that upon receipt of the payment from the Contractor with respect to the Contractor's current Application for Payment, it shall, if applicable, immediately execute and cause to be filed or recorded a legally effective Satisfaction of Lien, Release of Lien, or any other legal instrument necessary to cause prejudicial dismissal and release of any lien, encumbrance, lawsuit, or other claim against the Contractor, the Contractor's surety and the Owner, the property where the Project is located, and/or any surety bond posted by the Contractor or the Owner to the extent of the foresaid payment. Upon request of the Contractor, the undersigned shall provide proof of having complied with this obligation.

This Affidavit is for the benefit of, and may be relied upon by, the Contractor, the Contractor's surety and the Owner. The undersigned hereby agrees to indemnify, defend and hold harmless each of the foregoing, the Project, its Work, and real property from any and all claims, or liens that are or should have been released in accordance with this Affidavit and from any liability, cost, or expense incurred as a result of any breach of this Affidavit by the undersigned.

_____
Company Name

_____
Authorized Signature (Company Officer)

_____
Title

_____
Date

State of: _____ County of _____

Subscribed and sworn to before me this_____ day of _____. The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

Notary Public: _____

My Commission Expires: _____

CONTRACTOR'S FINAL WAIVER & RELEASE AFFIDAVIT
("AFFIDAVIT")

Project: Early Site and Restroom Renovation Project

In consideration for payment received from the **Upper Valley Career Center Board of Education** (the "Owner") in the amount requested in Contractor's Final Application for Payment to the Owner, the receipt of which is hereby acknowledged, the undersigned Contractor hereby waives and releases any rights it has or may have to any and all types of claims relating to the Project, including without limitation claims of payment, Mechanic's Lien, stop notice, equitable lien, labor and material bond, breach of contract or unjust enrichment, or any other claim against the Owner, for any labor, materials, or equipment the undersigned may have delivered or provided to the Project, except for any Claims the undersigned has made by properly and timely submitting a Statement of Claim form. The undersigned further certifies that this Affidavit covers claims by all contractors, subcontractors, and suppliers who may have provided any labor, material, or equipment to the Project through the undersigned or at the undersigned's request. The undersigned acknowledges that all such contractors, subcontractors, sub-subcontractors and suppliers have signed an affidavit in the form of this Affidavit releasing any and all claims against the Owner, except for any Claims the undersigned has made by properly and timely submitting a Statement of Claim form. The undersigned hereby represents and warrants that it has paid any and all welfare, pension, vacation or other contributions required to be paid on account of the employment by the undersigned of any laborers on the Project.

This Affidavit is for the benefit of, and may be relied upon by the Owner. The undersigned hereby agrees to indemnify, defend and hold harmless each of the foregoing, the Project, work of improvement, and real property from any and all claims, or liens that are or should have been released in accordance with this Affidavit.

_____
Company Name

_____
Authorized Signature (Company Officer)

_____
Title

_____
Date

State of: _____ County of _____

Subscribed and sworn to before me this
_____day
of _____.
The notarial act certified hereby is a jurat. An oath or affirmation was administered to the signer with regard to the notarial act certified to hereby.

Notary Public: _____

My Commission Expires: _____

CONTRACTOR'S PAYMENT APPLICATION CHECKLIST

THE CONTRACTOR MUST COMPLETE THIS CHECKLIST AND SUBMIT IT TO THE DESIGN PROFESSIONAL WITH ITS PAYMENT APPLICATION AND ALL REQUIRED DOCUMENTATION.

1. Contractor's Name: _____

2. Name, title, and telephone and fax numbers of Contractor's representative to contact regarding the Payment Application and required documentation:

   Name: _____ Title: _____

   Office Telephone No.: (____) _____ FAX No.: (____) _____

3. Payment Application Number and Date:

   No. _____ Date: _____ ___, 20_____

4. The following is a list of required documentation that must accompany its Payment Application. The Contractor certifies that it has submitted the documentation listed below with its Payment Application. If the Contractor cannot do so, the Contractor should explain why in Paragraph 5. Such explanations shall not excuse the Contractor from the requirements for submitting this documentation.

   _____ .1 Five (5) copies of a properly completed and executed Application for Payment with a properly completed and executed Schedule of Values attached to each;

   _____ .2 Properly Completed Contractor's Affidavit with List of Subcontractors and Suppliers and Any Amounts Withheld;

   _____ .3 Contractor's Wavier and Release Agreement (beginning with the second Application for Payment);

   _____ .4 For each of its Subcontractors and Suppliers, a Subcontractor's – Supplier's Waiver and Release Agreement (beginning with the second Application for Payment);

   _____ .5 Schedule of all materials and equipment stored on-site;

   _____ .6 For materials and equipment stored off-site:

      _____ A list of the materials and equipment consigned and stored off-site in connection with the Project (which shall be clearly identified), giving the place of storage, together with copies of invoices and reasons why the materials and equipment cannot be delivered to the site;

      _____ Certification that all items have been tagged for delivery to the Project and that they will not be used for any other purpose;

      _____ A letter from the Contractor's surety bonding company indicating agreement to the arrangements and that payment to the Contractor shall not relieve either party of its responsibility to complete the facility;

      _____ Evidence of adequate insurance covering the material and equipment in storage, which shall name the Owner as additional insured;

_____ Evidence that the Design Professional has visited the Contractor's place of storage and found that all the materials and equipment set forth in the payment request and represented to be stored off-site are stored at the place of storage (any costs incurred by the Design Professional to inspect material and equipment in off-site storage shall be paid by the Contractor); and

_____ Itemization of the materials and equipment and their cost, which were approved on previous Pay Applications and which remain in off-site storage.

_____ .7 Other documentation or information required by the Contract Documents or by the Design Professional or Owner.

5. Reason why required documentation is not submitted:

_____
_____
_____
_____
_____
_____

NOTE: The failure to submit required documentation, regardless of the reason, may result in non-payment, partial payment, and/or late payment.

_____
Signature

_____
Printed Name

_____
Date

DESIGN PROFESSIONAL'S REVIEW

_____ Checklist and documentation complete.

_____ Checklist and documentation incomplete.

_____
Signature

_____
Printed Name

_____
Date

Exhibit K

Contract Provisions for Non-Federal Entity Contracts under Federal Awards

All provisions provided below are hereby incorporated by reference into the contract to which this Exhibit is attached (the "Agreement") and by entering into this Agreement, Contractor certifies the following:

Appendix II to Part 200 Contract Provisions

(A) Contracts for more than the simplified acquisition threshold, currently set at $250,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Pursuant to Rule (A) above, the Owner reserves all rights and privileges under the applicable laws and regulations with respect to this procurement process in the event of breach of contract by either party.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

Pursuant to Rule (B) above, Owner reserves the right to terminate any agreement resulting from this procurement process, subject to the terms and conditions of the Agreement, if any.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

Pursuant to Rule (C) above, this provision is hereby incorporated by reference into the Agreement.

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

Pursuant to Rule (D) above, to the extent applicable, Contractor will follow all applicable Davis-Bacon Act provisions.

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Pursuant to Rule (E) above, Contractor certifies that Contractor will follow all applicable provisions of the Contract Work Hours and Safety Standards Act during the term of the Agreement.

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

Pursuant to Rule (F) above, Contractor certifies that during the term of the Agreement, Contractor agrees to comply with all applicable requirements referenced in Rule (F) above.

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended - Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

Pursuant to Rule (G) above, Contractor certifies that during the term of the Agreement, Contractor agrees to comply with all applicable requirements as referenced in Rule (G) above.

(H) Debarment and Suspension (Executive Orders 12549 and 12689) - A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Pursuant to Rule (H) above, Contractor certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency.

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352) - Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee

of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

Pursuant to Rule (I) above, as applicable, Contractor agrees to file all certifications and disclosures required by, and otherwise comply with, the Byrd Anti-Lobbying Amendment (31 USC 1352).

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (2 C.F.R. § 200.216)

Contractor, nor its subcontractors shall provide or install equipment, services, or systems that uses "covered telecommunications equipment or services" as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, "covered telecommunications equipment" is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities); video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities); telecommunications or video surveillance services provided by such entities or using such equipment; or telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Small and Minority Businesses, Women's Business Enterprises, and Labor Surplus Area Firms (2 C.F.R. § 200.321)

The Contractor shall take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Such affirmative steps must include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and

(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

Domestic Preferences (2 C.F.R. § 200.322)

Contractor agrees, as appropriate and to the extent consistent with law, and to the greatest extent practicable, to purchase, acquire, or use goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).

For purposes of this section, "produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the

United States, and "manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

Recovered Materials
(2 C.F.R. § 200.323)

Contractor agrees to the extent practical it complies with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act.

Record Retention
(2 C.F.R. § 200.334)

The Contractor shall comply with the record retention requirements detailed in 2 CFR § 200.334. Financial records, supporting documents, statistical records, and all other records pertinent to the federal award must be retained for a period of three years from the date of the completion of the project.

Access to Records
(2 C.F.R. § 200.337)

The Contractor shall comply with the access to records requirements detailed in 2 CFR § 200.337. The Federal awarding agency, Inspectors General, the Comptroller General of the United States, and the pass-through entity, or any of their authorized representatives, must have the right of access to any documents, papers, or other records of the Contractor which are pertinent to the Federal award, in order to make audits, examinations, excerpts, and transcripts. The right also includes timely and reasonable access to the Contractor's personnel for the purpose of interview and discussion related to such documents.

Intangible Property
(2 C.F.R. § 200.315)

The Federal awarding agency reserves a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the work for Federal purposes, and to authorize others to do so. The Contractor shall comply with requirements detailed in 2 CFR § 200.315.

Conflicts of Interest
(2 C.F.R. § 200.318)

The Contractor must maintain written standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award and administration of contracts. No employee, officer, or agent may participate in the selection, award, or administration of a contract supported by a Federal award if he or she has a real or apparent conflict of interest. Such a conflict of interest would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in or a tangible personal benefit from a firm considered for a contract. The officers, employees, and agents of the Contractor may neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or parties to subcontracts. The standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the Contractor.

Energy Policy and Conservation Act Compliance

To the extent applicable, Contractor certifies that during the term of the Agreement, Contractor will comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

Buy American Provisions Compliance

To the extent Contractor has agreed to comply with applicable provisions of the Buy American Act with a particular public entity, Contractor certifies that Contractor is in compliance with all applicable provisions of the Buy American Act. Purchases made in accordance with the Buy American Act shall follow the applicable procurement rules calling for free and open competition.

Complying with Federal, State, and Local Laws

Contractor agrees to comply with federal, state, and local laws, rules, regulations, and ordinances, as applicable. It is further acknowledged that Contractor certifies compliance with provisions, laws, acts, regulations, etc. as noted above.

Anti-Discrimination Laws

Statutes and regulations prohibiting discrimination applicable to this award include, without limitation, the following:

i. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 22, which prohibit discrimination on the basis of race, color, or national origin under programs or activities receiving federal financial assistance;

ii. The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.), which prohibits discrimination in housing on the basis of race, color, religion, national origin, sex, familial status, or disability;

iii. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability under any program or activity receiving federal financial assistance;

iv. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), and Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibit discrimination on the basis of age in programs or activities receiving federal financial assistance; and

v. Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto.

False Statements

Contractor understands that making false statements or claims in connection with this award is a violation of federal law and may result in criminal, civil, or administrative sanctions, including fines, imprisonment, civil damages and penalties, debarment from participating in federal awards or contracts, and/or any other remedy available by law.

Increasing Seat Belt Use in the United States

Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), the Contractor is encouraged to adopt and enforce on-the job seat belt policies and programs for their employees when operating company-owned, rented or personally owned vehicles.

Reducing Text Messaging While Driving

Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), the Contractor is encouraged to adopt and enforce policies that ban text messaging while driving, and establish workplace safety policies to decrease accidents caused by distracted drivers

PRE-BID SUBSTITUTION FORM

Note. Certain brands of material or apparatus are specified. Each bid will be based on these brands, which may be referred to in the Contract Documents as Standards. The use of another brand (referred to as a substitution or proposed equal in the Contract Documents, when a bidder or the contractor seeks to have a different brand of material or apparatus than that specified approved by the Owner for use in the Project) may be requested as provided in the Instructions to Bidders.

The detailed procedures for submitting substitutions are set forth in Paragraph J of the Instructions to Bidders.

Specification Section	Brand or Name Specified	Proposed Substitution

SECTION 01 00 10 – BASIC REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Contract Considerations:

1. Applications for Payment
2. Change Procedures
3. Allowances

B. Coordination and Meetings:

1. Coordination
2. Cutting and Patching
3. Progress Meetings

C. Submittals:

1. Submittal Procedures
2. Shop Drawings

D. Construction Facilities and Temporary Controls:

1. Parking
2. Progress Cleaning

E. Material and Equipment

1. Substitutions

F. Contract Close-out:

1. Contract Close-out Procedures
2. Final Cleaning
3. Project Record Documents
4. Warranties

5. Spare Parts and Maintenance Materials

1.02 WORK INCLUDES:

A. The General Contractor work is to include all of the following:

1. Demolition and removal of all items indicated on drawings.

2. Supply and installation of new construction.

3. All architectural and PME work as indicated on drawings.

1.03 SCHEDULING:

A. The contractor shall maintain free use by the residents of all means of egress and entry to the building, except for those times when the work prohibits their use. The Contractor shall schedule his work to minimize the time during which the entries and exits are out of use and shall schedule those times in advance with the University of Dayton.

B. Proposed schedule:

Construction Start:	Approx. April 23, 2024
Substantial Completion of Construction:	August 2, 2024
Owner Move-In:	August 9, 2024
Final Completion:	August 9, 2024

1.04 PERMITS, FEES, INSPECTIONS, LAWS AND REGULATIONS:

A. Obtain and pay for all permits required in connection with this work. In addition, pay all necessary inspection fees or similar charges. Laws and regulations which bear upon or affect this work shall be complied with and are hereby made a part of this section. All work which such laws require to be inspected shall be submitted to the proper public officials for inspection.

B. At completion of the project furnish to the Owner, at no additional charge, a certificate(s) of inspection issued by the authorized agency (or agencies) having jurisdiction over this project, stating that all work executed under this section complies with the minimum requirements.

C. Note that the General Building Permit will be obtained and paid for by the successful General Contract Bidder. Contractors bidding this section of the work shall make a sufficient allowance in their bid to reimburse the General Contractor for their proportionate share of the permit cost.

D. Additional fees, charges, etc. imposed by other contractors and/or tradesmen, professional consultants, etc. for services rendered in connection with performing any portion of the work under this section shall be included as part of the work. This shall include surveys, profiles and/or other miscellaneous drawings, etc. that may be required in addition to the contract documents by governing authority.

1.05 APPLICATION FOR PAYMENT:

A. Submit three (3) copies of each application on AIA Form G702 to Architect.

B. Content and format: Utilize Schedule of Values for listing items in Application for Payment.

C. Contractor shall include a Waiver of Lien for all subcontractors for work completed to date.

D. Payment Period: 30 days.

1.06 CHANGE PROCEDURES:

A. Change Order Forms: AIA G701.

1.07 CASH ALLOWANCES:

A. Costs included in Allowances: Cost of Product to Contractor or Sub-Contractor, less applicable trade discounts; delivery to site and installation.

1.08 COORDINATION:

A. Coordinate scheduling, submittals, and work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.

C. In finished areas, conceal pipes, ducts, and wiring within the construction.

1.09 CUTTING AND PATCHING:

A. Employ a skilled and experience installer to perform cutting and patching new work; restore work with new products.

B. Request in advance of cutting or altering structural or building enclosure elements.

C. Fit work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

D. Refinish surfaces to match adjacent finishes.

1.10 CONFERENCES:

A. When required in individual specification Section, convene a preinstallation conference at site prior to commencing work of the Section.

1.11 PROGRESS MEETINGS:

A. Schedule and administer meetings throughout progress of the work at minimum monthly intervals.

1.12 SUBMITTAL PROCEDURES:

A. Submittal form to identify Project, Sub-Contractor or supplier; and pertinent Contract Document references.

B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.

1.13 SHOP DRAWINGS:

A. Submit the number of opaque reproductions which Contractor requires, plus two (2) copies which will be retained by Owner.

1.14 TELEPHONE SERVICE:

A. Provide, maintain and pay for telephone service to field office at time of project mobilization.

1.15 PROGRESS CLEANING:

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

1.16 REMOVAL OF FACILITIES:

A. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.17 SUBSTITUTIONS:

A. Substitutions will only be considered when a Product becomes unavailable through no fault of the Contractor.

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

C. Submit three (3) copies of Request for Substitution for consideration.

1.18 CONTRACT CLOSEOUT PROCEDURES:

A. Submit written certification that Contract Documents have been reviewed, work has been inspected, and work is complete in accordance with Contract Documents and ready for Owner's inspection.

B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.19 FINAL CLEANING:

A. Execute final cleaning prior to final inspection.

B. Clean interior surfaces exposed to view. Vacuum carpeted and soft surfaces.

C. Clean debris from site.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.20 PROJECT RECORD DOCUMENTS:

A. Maintain on site, one set of Contract Documents to be utilized for record documents.

B. Record actual revisions to the work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product Section a description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit documents to the Architect with claim for final Application of Payment.

1.21 PERMITS AND APPROVALS

A. Contractor shall provide the original copies of all approved permits, inspection reports, logs, and inspection certificates with RECORD DOCUMENTS.

1.22 WARRANTIES:

A. Provide notarized copies.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Submit prior to final Application for Payment.

1.23 SPARE PARTS AND MAINTENANCE MATERIALS:

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver to Project site and place in location as directed, obtain receipt prior to final payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 01 00 – SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Project: Work covered by Contract Documents

B. Contract

C. Quality Assurance

D. Temporary facilities and service sections applicable to all contracts.

1.02 PROJECT:

A. Work included is within the Upper Valley Career Center Building. The Renovation includes upgrading the finishes in the High-Bay Lab group restrooms as indicated on the drawings, and site utility upgrades for the future Building renovation and Addition project to commence following work described above. The Adjacent areas of the building will be occupied during construction. Full access to the site will be provided. The contractor will be responsible for temporary partitions to separate the area of work from the adjacent spaces. Included in this project are:

1. Demolition of existing Restroom Finishes and Main Gas and Waterlines indicated

2. Installation of new Restroom Wall Finishes.

3. New Ceilings and LED lighting

4. New Solid Plastic Toilet Partitions

5. Construction of new Utility Connections

6. New fire protection in areas indicated.

7. New Toilet and Lavatory fixtures

1.03 CONTRACT:

A. Contract is to be stipulated sum for general construction including fire protection, plumbing, HVAC, electrical, Site work and demolition work as defined by the Contract Documents.

1.04 QUALITY ASSURANCE:

A. Explanation of the following requirements which are related to all sections of these specifications.

B. SUBSTITUTIONS: Where a Contractor, Sub-Contractor or Supplier desires to substitute materials or equipment, it shall be interpreted to mean an item of material or equipment similar to that named, and which is suited to the same use and capable of performing the same function as that named. The bid shall be based on the original item specified and the substitution requested listed on a separate appendix page showing the specified item, name, number, etc.; next: the requested substituted item; next: the price change, if any. Submit with the Bid the original catalog sheets and other information that will clearly identify the item. If not enough information is supplied, the request will be denied. If a second request is made, the General Contractor shall be charged for the Owner's time to review, per "Supplementary Conditions" Article 15. All substitutions, changes, alternates shall be approved in writing. Also submit an affidavit that shall state that said items will meet all requirements of the specifications and if said items are found to be limited or incomplete, the requesting party and/or Contractor will be required to provide and/or install items exactly as specified.

C. READ ENTIRE SECTION: The specifications are divided into sections and the sections into parts. It is the obligation of this contractor and related parties to read the entire section, understand its meaning and understand that parts are interrelated and knowledge of all items is necessary. If your work is affected by or related to other sections of these specifications it is your obligation to read and understand these sections also. If you do not understand any part or item, please request clarification in writing from the Owner prior to submitting your bid, or make a qualifying statement with your bid.

D. DESCRIPTION OF WORK: The extent of work under each section is shown on the drawings, including schedules, notes and details. The requirements of associations, government specs and requirement shall be considered part of these specifications as if written herein. Refer to Section 01090, pages 6 through 12, for a list of references and if you are unfamiliar with them, obtain copies from the originator for your knowledge and reference.

E. INSTALLATIONS (where called for): If you are supplying or installing one item over 100 SF or over 100 LF of a material, item or product, then the Owner requires that you install a portion of your work large enough to evaluate the product or item and small enough to remove if not satisfactory without additional expense. Proceed with the balance of the work only after approval of the sample has been reviewed by the Owner and approved in writing. Do not obligate yourself to the total material purchase for the whole job until after approval.

If time does not allow for this process then the Owner will review a test sample or other information that may satisfy him of the quality, style, color, etc. of the item, workmanship, etc. and approve based on this information.

F. QUALITY ASSURANCE: In addition to the requirements of these specifications, comply with the manufacturer's written and published instructions and recommendations for all phases of the work, including preparation of the substrate, adhesion, applying materials, protection and installation of the product. Protect against electrolytic action, if

your product becomes colder than the dew point, with asphalt paint or rubber sheet. Comply with the requirements of "Description of Work" above. If the manufacturer or supplier of a product does not have written instructions and recommendations, then obtain permission from the Owner to use the product prior to bidding the project.

G. FIELD MEASUREMENTS: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of the work. However, allow for trimming and fitting whenever taking field measurements before fabrication. Notify Owner of critical dimensions which need to be held prior to fabrication. If the dimensions are critical and the Owner is not notified, it is the responsibility of the Contractor or Sub-Contractor to refabricate this product.

H. WORKMANSHIP: Apply and install your work in a manner that is consistent so that your total work does not have one or two areas of items that are not consistent with the balance of the work. All work shall be equal to that approved under "Sample Installations" above. Use as few pieces and joints as possible. Maintain widths of joints in size and shape. If there is a difference of opinion between the Owner and Contractor as to quality of workmanship, the final overall workmanship shall be with the Owner.

I. SUBMITTALS AND SHOP DRAWINGS: Section 01 30 00 lists submittals and shop drawings requested by the Owner. The Owner has attempted to list all required, but in the event items were not listed, the Owner may require the contractor to submit those items requested by the Owner before or after the contract is signed or the work has started.

Each supplier, Contractor, or Sub-Contractor shall submit cut sheets, approximate cost if items, photos of items, and shop drawings he is supplying prior to ordering or installing or notify the Owner in writing that such submittals are not available. The Owner shall respond within 5 working days of receipt. Shop drawings shall be considered as always available. They shall consist of full room elevations; product assembly details; views of all sides, adequate sections no smaller than 1" = 1'-0" through all possible places and as required by the Owner. All shop drawings are to be reviewed by the Contractor and stamped first. The Owner will review shop drawings only once.

J. PRODUCT DELIVERY, HANDLING AND STORAGE: All items shall be delivered, stored, protected as recommended by the manufacturer and approved by the General Contractor. Items shall not bend, sag, become discolored or be damaged during storage. All products shall be identified as to model, make, size, quality, etc. on the label or as requested by the Owner.

K. JOB CONDITIONS: Each supplier, Contractor, or Sub-Contractor shall review the existing conditions at the site, the building during construction, the plans and specifications, shop drawings and coordination drawings as they are produced. Field measurements: understand that dimensions shown on the plans will vary, and fit his work into the building in a proper manner so it fits properly. No field conditions shall be used as an excuse for improper workmanship or fitting of his product into the building. Any supplier or sub-Contractor that needs absolute fixed dimensions, spaces, clearance shall notify the Owner and General Contractor in writing so the potential problem will be avoided.

L. WARRANTIES (or Guarantees): More stringent requirements may be required elsewhere in these specifications. Each product, item, system installed shall carry the longest and best warranties available from the manufacturer and the General Contractor shall warrant the proper installation of these products so the manufacturers' warranties will be in force for the full length of time. If the manufacturer refuses to honor his warranties because of disputed workmanship, then the General Contractor shall perform the work, labor and material to correct the problem in accordance with the intent of the warranty. The General Contractor shall warrant all work for one year from the agreed upon substantial date (longer when specified elsewhere) on all items and workmanship in or about the building. This includes but is not limited to fading, cracking, chipping, sagging, warping, twisting, leaking, and other items that could reasonably be expected to remain as is, if installed properly at the item of original installation.

1.05 ADDITIONS OF EQUIPMENT TO THE BUILDING:

A. The Owner and/or Architect will select colors, textures and finishes required in the specifications. The Owner expects complete freedom in selecting different materials, such as (but not limited to): paint, stain, wallcovering, plastic laminates, carpet, tile, aluminum, brick, cloth furniture, pavers, joint sealers, doors, windows, appliances, hardware, etc. that are specified as general items but come in various colors. If this freedom to select many colors or items affects your cost then it is the responsibility of the Contractor to notify the Owner 5 days before bids are due so the Owner has time to issue an addendum to the specification limiting the selection. If the Owner is not notified then he will have complete freedom to select as many different items or colors as he whishes at no additional cost.

1.06 FINISHES:

A. All interior usable spaces are to receive finishes. See also Interior Finish Schedule for standard and special finishes. Painting will be complete on exterior and interior, including all items or plaster, wood, steel, stucco (except where integral color specified), concrete and other materials normally painted (i.e. exposed at the completion of the job). Prefinished items, unless otherwise noted, will not be field-painted.

B. INTERIOR FINISHES FIRE RATINGS:

Walls and Ceiling	-	Class A (Flame spread 0-25)
Floors	-	Class A or B (Flame spread 26-75)

1.07 OWNER OCCUPANCY:

A. See Supplementary Conditions, Article 16.

1.08 LAYING OUT WORK:

A. General Contractor shall, immediately upon entering project site for purposes of beginning work, locate all general reference points and take such action as is necessary to prevent their destruction; lay out his own work and be responsible for all lines, elevations

and measurements of buildings, grading, paving, utilities and other work executed under the Contract.

B. He must exercise proper precaution to verify figures shown on drawings before laying out work and will be held responsible for any error resulting from his failure to exercise such precaution.

C. General Contractor shall be responsible for laying out all partitions, walls, floor levels, windows, doors and other openings, and all other elements of the building not specifically mentioned and shall insure that the work of all other contractors is in its proper location and is properly installed.

1.09 INTERIOR PARTITIONS:

A. Fire walls, smoke walls, insulated walls (sound and thermal), are called out on the drawings and shall be respected. Interior partitions shall meet the sound transmission requirements.

B. The typical partition for the project (minimum one hour fire rating) is steel studs with gypsum board base, both sides. All studs and runner track (including taped joints) to run from floor up to the underside of fire membrane structural floor (or roof) above except where specifically noted otherwise. All openings shall be sealed tight, both sides. Veneer plaster (where used) may be terminated above the ceiling line.

1.10 GENERAL PROJECT INFORMATION

A. Temporary window protection will be required to keep the building secure and dry.

B. Flooring protection (poly and Masonite) will be required in all areas of work (including corridors and path of travel areas)

C. Exterior barricades will be required around work and lift areas. These may be construction fencing, snow fence, barrels, etc.

1.11 PROJECT SCHEDULING

A. The contractor shall be required to submit for approval a complete project schedule utilizing the critical path method of scheduling.

B. It is anticipated that the project will utilize a 5 day work week, however contractor may opt to work additional hours as required to meet the schedule. Additional compensation will not be granted for overtime work required to meet the schedule. Contractor shall include this in his bid.

1.12 OCCUPANCY DURING WORK

A. The building will be occupied during this work. The owner will be responsible for moving of sensitive equipment, loose items, or belongings out of work area.

B. It is the contractor's responsibility to protect adjacent areas (including landscaping) from damage during construction.

C. It is the contractor's responsibility to maintain required lighting levels in corridors and to provide temporary lighting as required during their work and during school sessions.

D. It is the contractor's responsibility to maintain adequate egress for the entire building, including the areas of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 02 50 – APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Format and data

B. Preparation of Application for Payment

C. Substantiating data

1.02 RELATED SECTIONS:

A. Document AIA 201- General Conditions

B. Section 00800 – Supplementary Conditions

C. Section 01300 – Submittals

D. Section 01370 – Schedule of Values

E. Section 01700 – Contract Close-out

F. Section 01720 – Project Record Documents

1.03 RELATED DOCUMENTS:

A. Separation of these specifications into Divisions and Sections is for convenience only and is not intended to establish limits of work. Contractor, Sub-Contractors, Trades will observe all pertinent requirements of the General and Supplementary Conditions, General Requirements and all Contract Documents which are, in fact, a part of this Section as if written herein. Consult Index to be certain that set of Documents is complete.

1.04 FORMAT AND DATA REQUIRED:

A. Submit itemized applications typed on AIA Documents G702, Application and Certificate for Payment, and Continuation sheets G703.

B. Provide itemized data on continuation sheet:

1. Format

2. Schedules

3. Line items

4. Values

5. Those of Schedule of Values accepted by Owner

1.05 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT:

A. Prior to submitting the first payment application, the contractor shall submit to the architect for approval the schedule of values. This schedule of values shall be broken down by area, item of work, subcontractor, and include a value for labor and material for each item. Applications for payment will not be processed until a revised and approved schedule of values is received.

B. Application Form: Fill in required information, including that for Change Orders executed prior to the data of submittal of application.

C. Fill in summary of dollar values to agree with the respective total indicated on the continuation sheets.

D. Execute certification with the signature of a responsible officer of the contract firm.

E. Continuation Sheets: Fill in total list of all scheduled component items of Work, with item number and the scheduled dollar value for each item.

1. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored.

2. Round off values to nearest dollar, or as specified for the Schedule of Values.

3. List each Change Order executed prior to the date of submission, at the end of continuation sheets.

4. List by Change Order number, and description, as for an original component item of work.

1.06 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS:

A. When the Owner requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:

1. Project

2. Application number and date

3. Detailed list of enclosures

4. For stored products:

a. Item number and identification as shown on application
b. Description of specific material

5. Owner must check if project record drawings and specifications are current before request for payment will be approved. Submit Owner's written documentation that they have been checked.

B. See Supplementary Conditions Subparagraph 9.3.2 concerning the criteria required in order to qualify for payment of stored material.

C. Submit one copy of data and cover letter for each copy of applications.

D. EACH PAYMENT APPLICATION SHALL INCLUDE A RELEASE OF LIEN FOR ALL SUBCONTRACTORS.

1.07 APPLICATION SUBMITTAL TIME:

A. Submit Applications for Payment to Owner in accord with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.

B. As part of those conditions, the Application for Payment will be due the 10th of each month, with Payment normally made 30 days after.

1. Note that this has effect of changing the "At least ten days. . " statement in General Conditions Subparagraph 9.3.1 to 20 days.

1.08 PREPARATION OF APPLICATION FOR FINAL PAYMENT:

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01 70 00, Contract Closeout.

1.09 SUBMITTAL PROCEDURE:

A. Submit Applications for Payment to Owner at the time stipulated.

B. Number: Two copies of each Application.

C. When Owner finds the Application properly completed and correct, he will issue a certificate for payment and copy the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 04 50 – CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Requirements and limitations for cutting and patching of work.

1.02 RELATED SECTIONS:

A.Section 01300 – Submittals

B. Refer to the Division 15 and Division 16 sections for additional requirements and limitation on the cutting and patching of mechanical and electrical work, respectively. The requirements of this section apply to mechanical and electrical work, unless otherwise indicated.

C. Individual Product Specifications Sections

1. Cutting and patching incidentals to work of the sections.

2. Advance notifications to other sections of openings required, in work of those sections.

3. Limitations on cutting structural members by approval of engineer.

1.03 DEFINITIONS:

A. Cutting and Patching: is hereby defined to include, but is not necessarily limited to, the cutting and patching of nominally completed and previously existing work, in order to accommodate the coordination of work, or the installation of other work, or to uncover other work for access or inspection, or to obtain samples for testing, or for similar purposes, and is defined to exclude integral cutting and patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operations are excluded from the definition of cutting and patching.

B. Demolition: is recognized as an example of a related but separate category of work, which may or may not also require cutting and patching as defined in this section; refer to the Division 2 sections.

C. Excavating: and the associated operations of boulder removal, dewatering, bracing, removal of underground debris, penetration of rock and other barriers, backfilling, and similar work as specified in the Division 2 sections and in other contract documents, may be required as a special form of cutting and patching, but is recognized primarily as an example of a related but separate category of work.

D. Restoring: or removing and replacing non-complying work is specified separately from cutting and patching, but may require cutting and patching operations as specified herein. Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.

1.04 QUALITY ASSURANCE:

A. Requirement for Structural Work: Do not cut and patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.

B. Prior to cutting and patching the following categories of work, obtain the Owner's approval to proceed with cutting and patching as proposed in the submittal by the Contractor:

1. Structural Steel.

a. Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.

2. Structural concrete.

3. Foundation construction.

4. Bearing and retaining walls.

5. Structural decking.

6. Exterior curtain wall construction.

7. Pressurized piping, vessels and equipment.

8. Structural systems of special construction, as specified by Division 13 sections.

1.05 OPERATIONAL AND SAFETY LIMITATIONS:

A. General: Do not cut and patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.

B. Prior to cutting and patching the following categories of work, and similar categories where directed, obtain the Owner's approval to proceed with cutting and patching as proposed in the submittal by the Contractor:

1. Sheeting, shoring and cross-lot bracing.

2. Primary operational systems and equipment.

3. Water/moisture/vapor/air/smoke barriers, membranes and flashing.

4. Noise and vibration control elements and systems.

5. Control, communication, conveying and electrical wiring.

6. Special construction, as specified by Division 13 sections.

1.06 VISUAL REQUIREMENTS:

A. General: Do not cut and patch work, which is exposed on the exterior or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut and patch work, both as judged solely by the Owner. Remove and replace work judged by the Owner to be cut and patched in a visually unsatisfactory manner.

B. Engage the original Installer/Fabricator to perform cutting and patching of the following categories of exposed work. Where original Installer/Fabricator is not available (e.g. for work of a prior time), engage recognized expert entities to perform cut and patch work of the following:

1. Trees and shrubs.

2. Processed concrete finishes.

3. Stonework and stone masonry.

4. Ornamental work.

5. Matched-veneer woodwork.

6. Roofing.

7. Preformed metal panels.

8. Window wall system.

9. Stucco and ornamental plaster.

10. Acoustical ceilings.

11. Terrazzo.

12. Finished wood flooring.

13. Fluid applied flooring.

14. Carpeting.

15. Aggregate wall coating.

16. Wall covering.

1.07 SUBMITTALS:

A. Proposals for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposal well in advance of time work will be performed and request approval to proceed. Include description of why cutting and patching cannot (reasonably) be avoided, how it will be performed, how structural elements (if any) will be reinforced, products to be used, firms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual and other qualities of significance). Where applicable, include cost proposal, suggested alternatives to the cutting and patching proposed, and a description of circumstances which lead to the need for cutting and patching.

B. Approval by Owner to proceed with proposed cutting and patching does not waive right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

PART 2 PRODUCTS

2.01 MATERIALS:

A. General: Except as otherwise indicated or approved by the Owner, provide materials for cutting and patching which will result in equal or better work than the work being cut and patched, in terms of performance characteristics and including visual effect where applicable. Comply with the requirements, and use materials identical with the original materials where feasible and where recognized that satisfactory results can be produced thereby.

PART 3 EXECUTION

3.01 EXAMINATION:

A. Inspect existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing work, inspect conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION:

A. Temporary Support: Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work.

B. Protection: Provide adequate protection of other work during cutting and patching, to prevent damage, and provide protection of the work from adverse weather exposure.

C. Maintain excavations free of water.

3.03 CUTTING AND PATCHING:

A. Execute cutting, fitting, and patching (including excavation and fill) to complete work.

B. Fit products together, to integrate with other work.

C. Uncover work to install ill-timed work.

D. Remove and replace defective or non-conforming work.

E. Remove samples of installed work for testing (When requested).

F. Provide openings in the work for penetration of mechanical and electrical work.

3.04 PERFORMANCE:

A. General: Employ skilled tradesmen to perform cutting and patching. Except as otherwise indicated or approved by the Owner, proceed with cutting and patching at the earliest feasible time, in each instance, and perform the work promptly.

B. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original Installer where possible, and comply with his recommendations.

C. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.

D. Comply with the requirements of applicable sections of Division 2 where cutting and patching requires excavating and backfilling.

E. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

F. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch, after patched area has received prime and base coats.

G. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal coils with fire stopping materials in accordance with Sections 07270 as required for type of system.

H. Refinish surface to match adjacent finish. For continuous surface, refinish to nearest intersections or natural break. For an assembly refinish entire unit.

END OF SECTION

SECTION 01 09 00 – DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Definitions

B. Specification format and explanation

C. Drawing symbol

D. Industry standards

E. Schedule of references

1.02 DEFINITIONS:

A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in the contract documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to extent not stated more explicitly in another provision of the contract documents.

B. General Requirements: The provisions of requirements of Division 1 sections. General Requirements apply to entire work of Contract and, where syndicated, to other elements of work which are included in the project.

C. Indicated: The term “Indicated” is a cross-reference to details, notes or schedules on the drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in the contract documents. Where terms such as “shown”, “noted”, scheduled”, and “specified” are used in lieu of “indicated”, it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.

D. Directed, Requested, etc: Where not otherwise explained, terms such as “directed”, “requested”, “authorized”, “selected”, “approved”, “required”, “accepted”, and “permitted” mean “directed by Owner”, “requested by Owner” etc. However, no such implied meaning will be interpreted to extend Owner’s responsibility into Contractor’s area of construction supervision.

E. Refer: Used to indicate that the subject is defined or specified in further detail at another location in the contract documents, or elsewhere as indicated. Except as otherwise noted, “refer” does not imply that the Contractor must purchase or sub-contract the subject in any special manner.

F. Approve: Where used in conjunction with Owner's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Owner's responsibility and duties as specified in General and Supplementary Conditions. In no case will "approval" by Owner be interpreted as a release of Contractor from responsibilities to fulfill requirements of the contract documents.

G. Project Site: The space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on the drawings, and may or may not be identical with description of the land upon which project is to be built.

H. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

I. Install: Except as otherwise defined in greater detail, term "install is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimensions, finishing, curing protecting, cleaning and similar operations, as applicable in each instance.

J. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

K. Installer: The entity (person or firm) engaged by the Contractor or its sub-contractor or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.

L. Testing Laboratory: An independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections of tests.

1.03 SPECIFICATION FORMAT EXPLANATIONS:

A. General: This series of explanations is provided to assist the user of these specifications and associated contract documents to more readily understand the format, language, implied requirements and similar conventions of the content. None of these explanations will be interpreted to modify the substance of the requirements.

B. Specifications Production: portions of these specifications have been produced by Owner's standard methods of editing master specifications, and may contain minor deviations from traditional writing formats. Such deviations are a normal result of this production technique, and no other meaning will be implied or permitted.

C. Format Explanation: The format of principal portions of these specifications can be described as follows; although other portions may not fully comply with no particular significance will be attached to such compliance or non-compliance.

D. Divisions: For convenience, basic unit of specification text is a "section", each unit of which is named and numbered. These are organized into related families of sections, and various families of sections are organized into "divisions", which are recognized as a present industry-standard on uniform organization and sequencing of specifications based on CSI-Master Format. The section title is not intended to limit meaning or content of section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.

E. SECTIONS:

1. The sections are divided into three parts of related information as follows:

   Part 1 – General
   Part 2 – Product
   Part 3 – Execution

2. The text is written in standard outline format with the following items indicated as follows:

   1.01 Article heading
      A. Paragraph
         1. Sub-Paragraph

F. Imperative Language: Used generally in specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by Contractor, or when so noted, by others.

G. Section Numbering: Used to facilitate cross references in the contract document. By way of explanation, the make-up of a typical section number is:

1. First 2 digits indicates the division number,

2. Last 3 digits indicates the individual section of related type of work,

3. Cross references within the contract documents may be to any of these 2 levels of specification text and

4. Sections are placed in the project Manual in numerical sequence; however, the numbering sequence is not complete, and the listing of sections in the Project Manual Index must be consulted to determine the numbers and names of specification sections in the contract documents.

H. Page Numbering: Numbered independently for each section; recorded in listing of sections (Index or Table of Contents) in Project Manual. Section number is shown with page number at bottom right of each page, to facilitate location of text in Project Manual.

I. Specification Content: Because of methods by which this project specification has been produced, certain general characteristics of content, and conventions in use of language are explained as follows:

J. Specifying Methods: The techniques of methods of specifying to record requirements varied throughout the text, and may include “prescriptive”, “open generic-descriptive”, “compliance with standards”, “performance”, “proprietary”, or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.

K. Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements establishes different or conflicting minimums or levels of quality, most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into the contract documents (not by way of reference to an industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently equal but different requirements, and uncertainties as to which level of quality is more stringent, to Owner for a decision before proceeding.

L. Contractor’s Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor’s regardless of whether specifically indicated as such.

M. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances of uncertainty to Owner for decision before proceeding.

N. Specialists; Assignments: In certain instances, specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work.

1. These must be recognized as special requirements over which the Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application or regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as “expert” for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of entire set of requirements remains with Contractor.

2. Trades: Except as otherwise indicated, the use of titles such as “carpentry” in specification text, implies neither that the work must be performed by an accredited or unionized tradesman of the corresponding generic name (such as “carpenter”), nor that specified requirements apply exclusively to work by tradesmen of that corresponding generic name.

O. Abbreviations: The language of specification and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Actual word abbreviations of a self-explanatory nature have been included in the text. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the contract documents so indicates.

1.04 DRAWING SYMBOL:

A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposed indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., seventh edition.

1.05 INDUSTRY STANDARDS:

A. General Applicability of Standards: Applicable standards of construction industry have same force and effect (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith.

B. Reference standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.

C. Non-referenced standards are hereby defined to have no particular applicability to the work, except as a general measurement of whether work complies with standards recognized in construction industry.

D. Non-referenced standards recognized in the construction industry are hereby defined, except as otherwise limited in contract documents, to have direct applicability to the work, and will be so enforced for performance of the work.

E. Publication Date: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

F. Copies of Standards: Provide where needed for proper performance of the work; obtain directly from publication sources.

1.06 SCHEDULE OF REFERENCES:

A. Abbreviations and Names: Where acronyms or abbreviations are used in specifications or other contract document they are defined to mean the industry recognized name of trade association, standards generating organization, governing authority or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations", published by Gale Research Co., available in large libraries.

B. The following acronyms or abbreviations as referenced in contract documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of contract documents.

1.	AA	Aluminum Association, 818 Connecticut Ave., NW; Washington, DC 20006; 202/862-5100
2.	ADA (ADAAG)	Americans with Disabilities Act, www.ada.gov, US Department of Justice, 950 Pennsylvania Avenue, NW, Civil Rights Division, Disability Rights Section – NYA, Washington, D.C. 20530; (202) 307-1198
3.	AAMA	Architectural Aluminum Manufacturers Association, 35 E. Wacker Drive; Chicago, IL 60601; 312/782-8256
4.	AAN	American Association of Nurserymen, Inc., 230 Southern Bldg; Washington, DC 20005; 202/737-4060
5.	AASHTO	American Association of State Highway & Transportation Officials, 444 North Capitol; Washington, DC 20001; 202/624-5800
6.	AATCC	American Assoc. of Textile Chemists and Colorists, P.O. Box 12215; Research Triangle Park, NC 27709; 919/549-8141
7.	ACI	American Concrete Institute, P.O. Box 19150 Redford Sta.; Detroit, MI 48219; 313/532-2600
8.	ACIL	American Council of Independent Laboratories, 1725 K Street, NW; Washington, DC 20006; 202/659-3766
9.	AGA	American Gas Association; 1515 Wilson BlvD.; Arlington, VA 22209; 703/841-8400
10.	AHAM	Association of Home Appliance Manufacturers, 20 N. Wacker Dr; Chicago, IL 60606; 312/984-5400
11.	AI	The Asphalt Institute, Asphalt Inst. Bldg.; College Park, MD 20740; 301/927-0422
12.	A.I.A.	American Insurance Assoc., 85 John Street; New York, NY 10038; 212/433-4400
13.	AISC	American Institute of Steel Construction, Inc., 1221 Ave. of the Americas; New York NY 10020; 212/764-0440
14.	AISI	American Iron and Steel Institute, 1000 16th St., NW;

Washington, DC 20036; 202/452-7100

15. AITC — American Institute of Timber Construction, 333 W. Hampden Ave., Englewood, CO 80110; 303/761-3212

16. AMCA — Air Movement and Control Association, Inc., 30 W. University Dr.; Arlington Heights, IL 60084; 312/394-0150

17. ANSI — American National Standards Institute, 1430 Broadway; New York, NY 10018; 212/354-3300

18. APA — American Plywood Assoc., P.O. Box 2277; Tacoma, WA 98401; 206/272-2283

19. ARI — Air Conditioning and Refrigeration Institute, 815 N. Fort Myer Dr.; Arlington, VA 22209; 703/524-8800

20. ASHRAE — American Society of Heating, Refrigeration & Air Conditioning Engineers, Inc.; 345 East 47th St.; New York, NY 10017; 212/644-7940

21. ASME — American Society of Mechanical Engineers, 345 East 47th St.; New York, NY 10017; 212/644-7722

22. ASTM — American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103; 215/299-5400

23. AWI — Architectural Woodwork Institute, 5055 S. Chesterfield Rd.; Arlington, VA 22206; 703/671-9100

24. AWPA — American Wood-Preservers' Assoc., 7735 Old Georgetown Rd.; Bethesda, MD 20014; 301/562-3109

25. AWPB — American Wood Preservers Bureau, 2772 S. Randolph St.; Arlington, VA 22206; 703/931-8180

26. AWS — American Welding Society, Inc., 2501 NW 7th St., Miami, FL 33125; 305/642-7090

27. AWWA — American Water Works Association, Inc. 6666 W. Quincy Ave.; Denver, CO 80235; 303/794-7711

28. BHMA — Builders Hardware Manufacturers Assoc., 60 East 42nd St.; New York, NY 10017; 212/682-8142

29. BIA — Brick Institute of America, 1750 Old Meadow Rd.; McLean, VA 22101; 703/893-4010

30.	CDA	Copper Development Assoc., Inc., 405 Lexington Ave.; New York, NY 10017; 212/953-7300
31.	CE	Corps of Engineers (US Dept. of Commerce), Washington, DC 20315
32.	CRSI	Concrete Reinforcing Steel Institute, 180 North LaSalle St.; Chicago, IL 60601; 312/372-5059
33.	CS	Commercial Standard of NBS (US Dept. of Commerce), Government Printing Office; Washington, DC 20402
34.	DHI	Door and Hardware Institute, 1815 N. Ft. Myer; Arlington, VA 22209; 703/527-2060
35.	EIA	Electronics Industries Assoc., 2001 Eye St., NW; Washington, DC 20006; 202-457-4900
36.	FAA	Federal Aviation Administration (US Dept. of Transportation), 800 Independence Ave., SW; Washington, DC 20590
37.	FCC	Federal Communications Commission, 1919 M St., NW; Washington, DC 20554; 202/632-7000
38.	FGMA	Flat Glass Marketing Assoc., 3310 Harrison; Topeka, KS 66611; 913/266-7013
39.	FHA	Federal Housing Administration (US Dept. of HUD), 451 – 7th St., SW; Washington, DC 20201
40.	FM	Factory Mutual Engineering Corp., 1151 Boston-Providence Turnpike; Norwood, MA 02062
41.	FS	Federal Specification (General Services Admin.), Bldg. 197, Washington Navy Yard, SE; Washington, DC 20407
42.	FTI	Facing Tile Institute, 500 12th St., SW; Washington, DC 20024; 202/484-5558
43.	GA	Gypsum Association, 1603 Orrington Ave.; Evanston, IL 60201; 312/491-1744
44.	HPMA	Hardwood Plywood Manufacturers Assoc., P.O Box 6246; Arlington, VA 22206; 703/671-6262
45.	IRI	Industrial Risk Insurers, 85 Woodland St.; Hartford, CT 06102; 203/525-2601

46.	LPI	Lightning Protection Institute, 48 N. Ayer St.; Harvard, IL 60038; 815/943-7211
47.	MCA	Mechanical Contractors Association of America, Inc., 5530 Wisconsin Ave.; Washington, DC 20015; 301/654-7960
48.	MIA	Marble Institute of America, P.O Box 8156; West Palm Beach, FL 33407; 305/832-2577
49.	MIL	Military Standardization Documents (US Dept. of Defense) Naval Publications and Forms Center, 5801 Tabor Ave.; Philadelphia, PA 19120
50.	MLSFA	Metal Lath/Steel Framing Assoc., 221 N. LaSalle St.; Chicago, IL 60601; 312/346-1862
51.	MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc., 5203 Leesburg Pike; Falls Church, VA 22041; 703/998-7996
52.	NAAMM	The National Association of Architectural Metal Mfrs. 100 S. Marion St.; Oak Park, IL 60302; 312/383-7725
53.	NAPF	National Association of Plastic Fabricators, Inc., 4720 Montgomery Ln.; Washington, DC 20014; 301/656-8874
54.	NBS	National Bureau of Standards, (US Dept. of Commerce), Gaithersburg, MD 20234
55.	NCMA	National Concrete Masonry Association, 6845 Elm St.; McLean, VA 22101; 703/790-8650
56.	NEC	National Electrical Code (by NFPA)
57.	NECA	National Electrical Contractors Association, Inc., 7315 Wisconsin Ave.; Washington, DC 20014; 301/657-3110
58.	NEII	National Elevator Industry, Inc., 600 Third Ave.; New York, NY 10016; 212/986-1545
59.	NEMA	National Electrical Manufacturers Association, 2102 L. St., NW,; Washington, DC 20036; 202/797-5800
60.	NFPA	National Fire Protection Assoc., 470 Atlantic Ave.; Boston, MA 02210; 617/482-8755
61.	N.F.P.A.	National Forest Products Assoc., (Successor to NLMA) 1619 Massachusetts Ave., NW; Washington, DC 20036;

202/797-5800

62.	NHLA	National Hardwood Lumber Assoc., 332 S. Michigan Ave.; Chicago, IL 60604; 312/427-2810
63.	NPA	National Particleboard Assoc, 2306 Perkins Pl.; Silver Spring, MD 20910; 301/587-2204
64.	NSF	National Sanitation Foundation, 3475 Plymouth Rd.; Ann Arbor, MI 48106; 313/769-8010
65.	NSSEA	National School Supply & Equipment Association, 1500 Wilson Blvd.; Arlington, VA 22209; 703/524-8819
66.	NTMA	The National Terrazzo and Mosiac Association Inc., 3166 Des Plains Ave.; Des Plains, IL 60018; 800/323-9736
67.	NWMA	National Woodwork Manufacturers Assoc., Inc., 205 West Touhy Ave.; Park Ridge, IL 60068; 312/823-6747
68.	OSHA	Occupational Safety and Health Administration (UD Dept. of Labor), Government Printing Office; Washington, DC 20402
69.	PCI	Prestressed Concrete Institute, 20 N. Wacker Dr.; Chicago, IL 60606; 312/346-4071
70.	PDI	Plumbing and Drainage Institute, 5324 Blvd. Pl.; Indianapolis, IN 46208; 317/251-5298
71.	PEI	Porcelain Enamel Institute, Inc., 1911 N. Fort Myer; Arlington, VA 22209; 703/527-5257
72.	PS	Product Standard of NBS (US Dept. of Commerce), Government Printing Office; Washington, DC 20402
73.	RFCI	Resilient Floor Covering Institute, 1030 15th St., NW; Washington, DC 20005; 202/833-2635
74.	RIS	Redwood Inspection Service (Grading Rules) 627 Montgomery; San Francisco, CA 94111
75.	SAMA	Scientific Apparatus Makers Assoc, 1140 Connecticut, NW; Washington, DC 20036; 202/223-1360
76.	SDI	Steel Deck Institute, P.O. Box 3812; St. Louis, MO 63122; 314/965-1741

77.	S.D.I.	Steel Door Institute, 712 Lakewood Ct., N.; Cleveland, OH 44107; 216/226-7700
78.	SHLMA	Southern Hardwood Lumber Manufacturers Association, 805 Sterick Bldg.; Memphis, TN 38103; 901/525-8221
79.	SIGMA	Sealed Insulating Glass Manufacturers Association, 3310 Harrison St.; Topeka, KS 66611; 913/266-7036
80.	SJI	Steel Joist Institute, 1703 Parham Rd.; Richmond, VA 23229; 804/288-3071
81.	SMACNA	Sheet Metal & Air Conditioning Contractors National Association, Inc.; 8224 Old Courthouse Rd.; Vienna, VA 22180; 703/790-9890
82.	SPIB	Southern Pine Inspection Bureau (Grading Rules), P.O. Box 846; Pensacola, FL 32594; 904/434-2611
83.	SSPC	Steel Structures Painting Council, 4400 5th Avenue; Pittsburgh, PA 15213; 412/478-2237
84.	TCA	Tile Council of America, Inc., P.O. Box 326; Princeton, NJ 08540; 609/921-7050
85.	TIMA	Thermal Insulation Manufacturers Assoc., 7 Kirby Plaza; Mt. Kisco, NY 10549; 914/241-2284
86.	UL	Underwriters Laboratories, Inc., 207 East Ohio St., Chicago, IL 60611; 312/642-6969
87.	UFAS	Uniform Federal Accessibility Standards, www.access-board.gov, United States Access Board 1331 F Street, NW, Suite 1000 Washington, DC 2004-1111; 202/272-0080
88.	WCLIB	West Coast Lumber Inspection Bureau (Grading Rules) P. O. Box 23145; Portland OR 97223; 503/639-0651
89.	WIC	Woodwork Institute of California, P.O. Box 1666; Fresno, CA 93717
90.	WRI	Wire Reinforcement Institute, 7900 Westpark Drive; McLean, VA 22101; 703/790-9790
91.	WWPA	Western Wood Products Association, (Grading Rules), 1500 Yeon Bldg.; Portland, OR 97204; 503/224-3930
92.	W.W.P.A.	Woven Wire Products Association, 108 W. Lake St.,

Chicago, IL 60601; 312/332-6502

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 30 00 - SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Submittal Requirements

B. Progress Schedule

C. Certified Layout

D. Certificates of Insurance

E. Schedule of Values

F. Application for Payment

G. Progress Photographs

H. Shop Drawing, Product Data and Samples

I. M/E Equipment

1.02 RELATED SECTIONS:

A. Document AIA 201 – General Conditions

B. Section 008000 – Supplementary Conditions

C. Section 01010 0– Summary of Work

D. Section 010250 – Application for Payment

E. Section 011500 – Schedule, reports, payments

F. Section 013100 – Progress Schedule

G. Section 013400 – Shop Drawings, Product Data & Samples

H. Section 013700 – Schedule of Values

1.03 PROGRESS SCHEDULE:

A. Submit an accurate schedule, within two (2) weeks after Award of Contract, indicating proposed starting and completion dates for each major phase of work. Suggested form of schedule is the Bar-Graph Type. See General Conditions, Paragraph 3.10 for additional requirements.

B. See Section 013100 – Progress Schedule.

C. Extensions of time and extra payments will not be authorized for overtime work or premium-price purchases necessary to complete work within scheduled time.

1.04 CERTIFIED LAYOUT:

A. Contractor shall provide services of a registered land surveyor to verify building layout and to certify to Owner that building location and floor elevations conform to the Contract Documents. See Section 010100, Summary of the Work.

1.05 CERTIFICATES OF INSURANCE:

A. Refer to General and Supplementary Conditions, paragraphs 11.1.3 for requirements.

1.06 SCHEDULE OF VALUES:

A. Refer to General and Supplementary Conditions, paragraphs 9.2.1, for cost breakdown requirements.

B. See Section 013700 – Schedule of Values.

1.07 APPLICATIONS FOR PAYMENT:

A. Refer to General and Supplementary Conditions, Paragraphs 9.3.1 thru 9.3.3, for Progress Payment information.

B. See Section 010250 – Application for Payment.

1.08 PROGRESS PHOTOGRAPHS:

A. Contractor shall take eight (8) photographs of site before work is started and eight (8) photographs of work on or about the first (1st) of each month during progress of work. Take photographs from locations as directed or as required to show the progress of the work.

B. Deliver to Owner one (1) glossy print, snapshot size, noted on back with date, location and view orientation from each negative prior to each request for payment.

C. Where additional prints are required, cost will be reimbursed by person requiring prints.

1.09 MANUFACTURER'S DATA, SHOP DRAWINGS, SAMPLES, CERTIFICATES/TESTS AND EXTRA STOCK OF MATERIALS:

A. Refer to general and Supplementary Conditions, paragraphs 3.12.1 thru 3.12.11 for shop drawing and sample requirements.

B. See Section 013400 – Shop Drawing, Product Data and Samples.

1.10 M/E EQUIPMENT:

A. M/E Equipment Approval: Approval of exposed equipment, exposed covers, plates, shields and similar items visible/exposed on walls, floors and ceilings or other locations:

1. The supplier of such items shall submit samples of available colors, textures and sizes to the Owner for selection prior to ordering or installation of such items.

2. If any supplier or sub-contractor installs items without approval and the size, color, texture or other characteristics are inappropriate, the Owner may select an alternate item and the installer shall remove the item in question and install the new selection at no charge to the Owner.

3. If the item selected has a different retail price than the supplied item, supplier shall notify the Owner and shall pay 65% of the suggested retail difference to the supplier. No allowance shall be made for labor.

B. Such items may be (but are not limited to) as listed below:

1.

Fire Extinguisher Cabinets	HVAC Thermostat
Fire Pull Stations	HVAC Heating Unit Cabinets
Smoke Detectors	HAVC Diffuser
Alarm Bells	HVAC Return Grilles
Electrical Cover Plates	Plumbing Fixtures
Electrical Panel Cabinets	Water Coolers
Fire Alarm Annunciator Panel	Security Control Panels
Ceiling Speakers	Intercom Units
Electrical Devices	

2. This is not a complete list of all items required to be submitted. The Contractor is responsible for a complete list of items. The color selection might not be limited to the manufacturer’s standard color selection.

END OF SECTION

SECTION 013100 - PROGRESS SCHEDULE

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

A. Procedures for preparation and submittal of construction progress schedules and periodical updating.

B. Contractors other than the General Contractor shall furnish, in a timely manner, detailed information required for preparation of the progress schedule by the General Contractor.

3. RELATED REQUIREMENTS

A. Specified elsewhere:

1. Section 013400 - Shop Drawing, Product Data and Samples.

4. FORMAT

A. Prepare schedules as a horizontal bar chart with separate bar for each major portion of work or operation, identifying first workday of each week.

B. Sequence of Listings: The Table of Contents of project manual.

C. Scale and Spacing: To provide space for notations and revisions.

D. Sheet Size: Minimum 8.5”x11”

5. CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Indicate delivery dates for material and equipment critical to the progress of the work.

B. Identify each item by major specification section number.

C. Identify work of separate stages and other logically grouped activities.

D. Provide sub-schedules for each stage of work.

E. Provide sub-schedules to define critical portions of entire schedule.

F. Show accumulated percentage of completion of each item and total percentage of work complete, as of the first day of each month.

G. Provide separate schedule of submittal dates for shop drawings, product data, and samples and dates reviewed submittals will be required from Architect. Show decision dates for selection of finishes.

6. REVISIONS TO SCHEDULES

A. Indicate progress of each activity to date of submittals and projected completion date of each activity.

B. Identify activities modified since previous submittal, major changes in scope and other identifiable changes.

C. Provide narrative report to define problem areas, anticipated delays and impact on schedule. Report corrective action taken, or proposed and its effect.

7. SUBMITTALS

A. Submit initial schedules within 15 days after date of Owner-Contractor Agreement. After review, resubmit required revised data within ten days.

B. Submit revised Progress Schedule with each Application for Payment.

C. Submit the number of opaque reproductions which Contractor requires, plus 3 copies which will be retained by Architect. Submit under transmittal letter.

8. DISTRIBUTION

A. Distribute copies of review schedules to job site file, subcontractors, other contractors, suppliers and other concerned entities.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS
Not Applicable

PART 3 - EXECUTION
Not Applicable

END OF SECTION

SECTION 013400 - SHOP DRAWINGS, PRODUCT DATA & SAMPLES

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

A. Procedures for submittals.

3. SHOP DRAWINGS

A. Present in a clear and thorough manner. Title each drawing with project and contract name and number; identify each element of drawings by reference to sheet number and detail, schedule or room number of Contract Documents.

B. Identify field dimensions, show relation to adjacent or critical features of work or products.

C. Minimum Sheet Size: 11" x 17" or multiples of 8-1/2" x 11".

D. Reproduction of Contract Documents are not acceptable as shop drawings.

E. ALL Shop Drawings shall be submitted in a digital format (pdf).

F. Each Shop Drawing shall include a copy of Architect’s Shop Drawing Submittal Form with all applicable information completed by contractor.

4. PRODUCT DATA

A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics and capacities, wiring and piping diagrams and controls, component parts, finishes, dimensions and required clearances.

B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to work. Delete information not applicable.

5. SAMPLES

A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures and patterns for Architect selection.

B. Submit samples to illustrate functional characteristics of products, including parts and attachments.

C. Approved samples which may be used in the work area indicated in specification sections.

D. Label each sample with identification required for transmittal letter.

E. Provide field samples of finishes at project, at location acceptable to Architect, as required by individual specification sections. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work.

F. Submit for approval two (2) samples, or as otherwise required by the specifications.

6. MANUFACTURER'S INSTRUCTIONS

A. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing and finishing.

7. CONTRACTOR REVIEW

A. Review submittals prior to transmittal, determined and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of contract documents.

B. Coordinate submittals with requirements of work and of contract documents.

C. Sign or initial each sheet of shop drawings and product data and each sample label to certify compliance with requirements of contract documents. Notify Architect in writing at time of submittals, of deviations from requirements of contract documents. IT IS NOT ARCHITECT OR ENGINEER RESPONSIBILITY TO REVIEW FINAL DIMENSIONS OR QUANTITIES. APPROVAL OF A SHOP DRAWING DOES NOT CONSTITUTE APPROVAL OF A DEVIATION FROM THE CONTRACT DOCUMENTS UNLESS SPECIFICALLY NOTED.

D. Do not fabricate products or begin work which requires submittals until return of submittal with Architect acceptance.

8. SUBMITTALS REQUIREMENTS

A. Transmit submittals in accord with approved Progress Schedule.

B. Include Architect’s Shop Drawing Submittal Form attached as the first page of each submittal. If this form is not used, the submittal will be returned without review.

C. Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of work and contract documents.

D. Coordinate submittals into logical groupings to facilitate interrelation of several items:

1. Finishes which involve Architect selection of colors, textures or patterns.

2. Associated items which require correlation for efficient function or for installation.

E. All shop drawings shall be submitted in digital format. If hard copies are provided, Original submission of shop drawings as required by the contract shall be in the form of one set of reproducible transparencies, such as ozalid, sepias and one set of prints. Standard mass produced items may be catalog cuts of which Contractor has had a reproducible transparency prepared, except in the instance of items especially adapted for this project.

F. Submit number of samples specified in individual specification sections.

G. Submit under Architect accepted form transmittal letter. Identify project by title and number, identify contract by number. Identify work and product by specifications section and article number.

H. Contractor shall submit copies of submittals to Owner at the same time the original submission is made to Architect – or follow procedure as directed by the Construction Manager.

I. During the checking of shop drawings, phone conversations with Contractors, etc., if any revisions are being made to the contract documents, make a written record for all revisions to the drawings/specifications (for Record Drawings/Record Addendum), note the revisions in red, on the stick set of drawings/specifications and file the written record in the "Record Drawing and Record Addendum" section of the job notebook.

9. RESUBMITTALS

A. Make resubmittals in accordance with requirements for initial submittals, clearly identify changes made since previous submittal.
B. A maximum of 2 resubmittals will be accepted at no cost to Contractor. Contractor shall be responsible for direct compensation to Architect or Engineer for resubmittals above and beyond 2. Hourly rate assessed will be $200/hour.

10. DISTRIBUTION

A. Duplicate and distribute reproductions of shop drawings, copies of product data and samples, which bear Architect stamp of approval, to job site file, Record Documents file, subcontractors, suppliers, other affected Contractors, and other entities requiring information.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SHOP DRAWING SUBMITTAL FORM

TO: ROBB BROWN

DATE:

PROJECT: Upper Valley Career Center
Early Site and Restroom Renovation

PROJECT NO: 233448.00

LEVIN PORTER
ARCHITECTS
3011 NEWMARK DRIVE
MIAMISBURG, OHIO 45342
Levin Porter Associates Inc. dba Levin Porter Architects

SPECIFICATION SECTION:

SUBMITTAL DESCRIPTION:

Y ☐ N ☐ APPROVED MANUFACTURER

Y ☐ N ☐ RESUBMITTAL ITEM / SHOPDRAWING

MANUFACTURER:

COMMENTS:

LEAD TIME FOR DELIVERY:

LPA'S SHOP DRAWING LOG NO.

COLOR:

COMMENTS:

REVIEWED BY:

CONTRACTOR'S SHOP DRAWING STAMP

ARCHITECT'S REVIEW STAMP

SECTION 01 37 00 – SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Format and Content

B. Content

C. Submittal Time

1.02 RELATED SECTION:

A. Section 00 70 00 - Document AIA 201- General Conditions

B. Section 01 02 50 – Application for Payment

C. Section – 01 15 00 – Schedule, Reports, Payments

D. Section 01 30 00 – Submittal

1.03 FORM OF SCHEDULE OF VALUES:

A. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.

B. Follow the Table of Contents of this project manual as the format for listing component items.

C. Identify each major line item with the number and title of the respective major section of the specifications.

D. For each major line item list sub-values of major products or operations under the item.

E. For the various portions of the work: each item shall include a directly proportional and amount of the Contractor's overhead and profit.

F. For items on which progress payments will be requested for stored materials, break down the value into:

1. The cost of the materials, delivered and unloaded, with taxes paid.

2. The total installed value.

G. The schedule of values shall be prepared in such a manner that each major item of work and each subcontracted item of work can be shown as a single line item on AIA document G703, Application and Certificate for Payment, Continuation Sheet.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 40 00 – QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Quality assurance and control of installation

B. References

C. Field Samples

D. Mock-up

E. Inspection and testing laboratory services

F. Manufacturer's field services and reports

1.02 RELATED SECTIONS:

A. Section 01 09 00 – Definition and Standards

B. Section 01 30 00 – Submittals

C. Section 01 41 00 – Testing Laboratory Services

D. Section 01 60 00 – Material and Equipment

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION:

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply fully with manufacturer's instructions, including each step in sequence.

C. Should manufacturer's instruction conflict with Contract Documents, request clarification from Owner/Engineer before proceeding.

D. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.04 REFERENCES:

A. Conform to reference standard by date of issue or current date on Contract Documents.

B. Obtain copies of standards when required by Contract Documents.

C. Should specified reference standards conflict with Contract Documents, request clarification from Owner/Engineer before proceeding.

D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or interference otherwise in any reference document.

1.05 FIELD SAMPLES:

A. Install field samples at the site as required by individual specifications Sections for review.

B. Acceptable field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Owner/Engineer.

1.06 MOCK-UP:

A. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes.

B. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Owner/Engineer.

1.07 MANUFACTURER'S FIELD SERVICES AND REPORTS:

A. Submit qualifications of observer to Owner/Engineer 30 days in advance of required observations. Observer subject to approval of Owner/Engineer.

B. When specified in individual specifications Sections, required materials or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment and as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

D. Submit report in duplicate within 7 days of observation to Owner/Engineer for review.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 015100 - TEMPORARY FACILITIES & CONTROLS

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this section. The Contractors shall be responsible for complete familiarity with same.

2. BARRICADES

A. The Contractor shall furnish and erect barricades constructed and located in strict accordance with the Codes, Rules and Regulations having jurisdiction over this work, and as approved by the Owner.

B. The Contractor shall obtain and pay for all necessary permits with respect to the barricades from the proper authorities and keep such permits in full force for the duration of the project.

C. Barricades shall be maintained in a sightly condition and shall remain in place after contract completion at the Owner's request.

3. CONSTRUCTION OFFICE AND SHEDS

A. Each Contractor, at their option, shall provide and maintain adequate field office facilities with table, racks and filing cabinets to suitably accommodate the Drawings, Specifications and Shop Drawings, and each Contractor shall install and maintain a telephone with outside signal and answering machine.

B. Each Contractor shall provide his own enclosures, tool sheds, etc., as required for storage of his materials. Extent and location shall be subject to approval by the Owner. Maintain storage off site where possible to ease congestion.

4. TEMPORARY TOILETS

A. The Contractor shall provide and maintain approved chemical toilets in such numbers and in locations as required.

5. TEMPORARY WATER SUPPLY

A. The Contractor shall arrange and pay for connection to the existing water service. (Cost for all the water used by all Contractors during the entire construction period shall be paid by the Owner).

B. The Contractor shall install and pay for temporary risers, hose bibbs, and suitable supports as required.

C. The Contractor shall provide and be responsible for dispensing drinking water for all workmen on the site. An adequate supply of drinking water shall be available on the site a convenient distance from any workman in the building.

6. TEMPORARY LIGHT AND POWER

A. The Contractor shall provide temporary light and power for construction purposes for use by all Contractors, including the cost of running in temporary service. Lighting shall conform to OSHA guidelines currently in effect.

B. Individual Contractors shall be responsible for any special voltage or power requirements which they may require and shall provide necessary auto transformers and electrical extension to panelboard locations.

C. The Contractor shall furnish all lamps at the start of light and power usage. Any additional lamps required during the entire construction period shall be furnished by the Contractor.

D. The Owner shall pay for all power consumed.

7. TEMPORARY UTILITIES

A. Any Contractor requiring one of the temporary services before it can be provided as specified, or whose requirements with respect to a particular service differ from the service specified shall provide such services as suits his needs, at his own expense and in a manner satisfactory to the Owner.

B. Temporary utilities shall be installed in such a manner as not to interfere with work of other trades or the permanent construction. If such interference does occur, it shall be the responsibility of the Contractor causing interference to make and changes required to overcome the interference. The cost of these changes shall be borne by the Contractor.

C. All hoses and extensions shall be furnished by the individual Contractors. Utility bills shall be paid by the Owner.

8. CONSTRUCTION EQUIPMENT

A. The Contractor shall furnish and maintain all equipment such as ladders, ramps, scaffolding requirements, derricks, chutes, etc. required for proper execution of the work. The Contractor shall permit other Contractors or Subcontractors to use equipment provided by him. All equipment shall be maintained in proper condition, properly grounded and operated.

9. WATCHMAN

A. The Contractors may, at their option, employ a watchman to guard the premises when the workmen are not on the job. Each Contractor will be responsible for all damages or loss of material on his work under construction including theft or vandalism during the entire construction period, whether or not a watchman is employed.

10. WEATHER PROTECTION

A. It is the intent of these Specifications to have each Contractor protect his work and existing or adjacent property against weather, rain, water, wind, storms, frost or heat to maintain his work, material, apparatus, fixtures, free from injury or damage in accordance with the General Conditions. Work likely to be damaged shall be covered at the end of each day's

work. Any work damaged by failure to provide protection above required, shall be removed and replaced with new work at the Contractor's expense.

11. TRASH

A. The Contractor shall be responsible for providing trash containers throughout the project for use by all Contractors, and shall also provide a single large dumpster within the staging area; the General Contractor shall be responsible for all waste handling procedures and final disposal.

12. OTHER CONTRACTS

A. The Owner may conduct his own maintenance, renovation or construction projects using his own labor in this and/or other areas of the site. Access to these areas through the construction site shall be provided by the Contractor.

END OF SECTION

SECTION 01 60 00 – MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Reuse of existing materials

B. Manufacturer's instructions

C. Transportation and handling

D. Storage and Protection

E. Substitutions and product options

1.02 RELATED SECTIONS:

A. Document AIA 201 General Conditions

B. Section 00 80 00 – Supplementary Conditions

C. Section 01 30 00 – Submittals

D. Section 01 70 00 – Contract Close-out

1.03 MATERIAL AND EQUIPMENT, GENERAL:

A. Material and equipment incorporated into the work; conform to applicable specification and standards.

1. Comply with size, make, type and quality specified, or as specifically approved in writing by the Owner.

B. Manufactured and Fabricated Products: Design, fabricate and assemble in accordance with the best engineering and shop practices.

C. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.

1. Two or more items of the same kind shall be identical, by the same manufacturer.

D. Products shall be suitable for service conditions.

E. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

F. Do not use material or equipment for any purpose other than for which it is designed or is specified.

1.04 REUSE OF EXISTING MATERIALS:

A. Except as specifically indicated or specified, materials and equipment removed from the existing structure shall not be used in the completed work.

B. For material and equipment specifically indicated or specified to be reused in the work:

1. Use special care in removal, handling, storage and reinstallation to assure proper function in the complete work.

2. Arrange for transportation, restoration or renovation. Pay all costs for such work.

1.05 MANUFACTURER'S INSTRUCTIONS:

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Owner.

B. Maintain one set of complete instructions at the job site during installation and until completion.

C. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

D. Should job conditions or specified requirements conflict with manufacturer's instruction, consult with Owner for further instructions.

1. Do not proceed with work without clear instructions.

E. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.06 TRANSPORTATION AND HANDLING:

A. Arrange deliveries of products in accord with construction schedule, coordinate to avoid conflict with work and conditions at the site.

B. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

1. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that the products are properly protected and undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.07 STORAGE AND PROTECTION:

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

B. Store products subject to damage by the elements in weathertight enclosures.

C. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

D. Exterior Storage: Store fabricated products above the ground, on blocking or skids, prevent soiling or staining.

1. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.

2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

3. Arrange storage in a manner to provide easy access for inspection.

4. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

E. Protection after Installation: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

1.08 PRODUCT OPTIONS:

A. Products list: Within 30 days after Contract Date, submit to Owner a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.

B. Contractor's Options: For products specified only by reference to a standard, select any product meeting that standard.

C. For products specified by naming several products or manufacturers, select any one of the products or manufacturers names, which complies with the specifications.

D. For products specified by naming one or more products or manufacturers and "or equal", Contractor must submit a request as for substitutions for any product or manufacturer not specifically named.

E. For products specified by naming only one product and manufacturer, substitution may be considered only during bidding.

1.09 SUBSTITUTIONS:

A. Where a Contractor, Sub-contractor or supplier desires to substitute materials or equipment, it shall be interpreted to mean an item of material or equipment similar to that named, and which is suited to the same use and capable of performing the same function as that named.

B. The bid shall be based on the original item specified and the substitution requested listed on a separate appendix page showing the specified item, name, number, etc.; next: the requested substituted item; nest: the price change, if any. Submit with the bid the original catalog sheets and other information that will clearly identify the item. If not enough information is supplied, the request will be denied. If a second request is made, the General Contractor shall be charged for the Owner's time to review, per "Supplementary Conditions", Article 15. All substitutions, changes, alternates shall be approved in writing.

C. Also submit an affidavit that shall state that said items will meet all requirements of the specifications and if said items are found to be limited or incomplete, the requesting party and/or Contractor will be required to provide and/or install items exactly as specified.

D. A written guarantee that the offered product will perform and fit into the project equally to that specified.

E. Owner shall be the judge of the acceptability of the proposed substitution.

F. Contractor's Representation: See Supplementary Condition 4.4.4.2. Owner will review requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

G. Substitutions will not be considered if they are indicated or implied on shop drawing submissions without the formal request required; or for their implementation they require a substantial revision of the Contract Documents in order to accommodate their use.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 016100 - TRANSPORTATION AND HANDLING

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

A. Packaging, transportation.
B. Delivery and receiving.
C. Product handling.

3. RELATED REQUIREMENTS

A. Specified elsewhere:

1. Section 013100 - Progress Schedules
2. Section 013400 - Shop Drawings, Product Data and Samples
3. Section 016200 - Storage and Protection
4. Individual Sections - Specific requirements for packaging, shipping and handling.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

1. PACKAGING, TRANSPORTATION

A. Require supplier to package products in boxes or crates for protection during shipment, handling and storage. Protect sensitive products against exposure to elements and moisture.

B. Protect sensitive equipment and finishes against impact, abrasion and other damage.

2. DELIVERY AND RECEIVING

A. Arrange deliveries of products in accord with construction progress schedules. Allow time for inspection prior to installation.

B. Coordinate deliveries to avoid conflict with work and conditions at site, work of other Contractors, limitations on storage space, availability of personnel handling equipment and Owner's use of premises.

C. Deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.

D. Clearly mark partial deliveries of component parts of equipment to identify equipment and content to permit easy accumulation of parts to facilitate assembly.

E. Immediately on deliver, inspect shipment to assure:

1. Product complies with requirements of contract documents and reviewed submittals.

2. Quantities are correct.

3. Accessories and installation hardware are correct.

4. Containers and packages are intact and labels legible.

5. Products are protected and undamaged.

3. PRODUCT HANDLING

A. Provide equipment and personnel to handle products, by methods to prevent soiling and damage.

B. Provide additional protection during handling to prevent marring and otherwise damaging products, packaging and surrounding surfaces.

C. Handle product by methods to avoid bending or overstressing. Lift large and heavy components only at designated lift points.

END OF SECTION

SECTION 016200 - STORAGE AND PROTECTION

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

A. Storage, general.
B. Enclosed storage.
C. Exterior storage.
D. Maintenance of storage.

3. RELATED REQUIREMENTS

A. Specified elsewhere:

1. Section 016100 - Transportation & Handling
2. Section 017000 - Project Close-Out

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

1. STORAGE, GENERAL

A. Store products, immediately on delivery, in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.

B. Arrange storage in a manner to provide access for maintenance of stored items and for inspection.

2. ENCLOSED STORAGE

A. Store products, subject to damage by the elements, in substantial weathertight enclosures.

B. Maintain temperature and humidity within ranges stated in manufacturer's instructions.

C. Provide humidity control and ventilation for sensitive products required by manufacturer's instructions.

D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

3. EXTERIOR STORAGE

A. Provide substantial platforms, blocking or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.

B. For products subject to discoloration or deterioration from exposure to the elements, cover with impervious sheet material. Provide ventilation to avoid condensation.

C. Provide surface drainage to prevent erosion and ponding of water.

D. Prevent mixing of refuse or chemically injurious materials or liquids.

4. MAINTENANCE OF STORAGE

A. Periodically inspect stored products on a scheduled basis.

B. Verify that storage facilities comply with manufacturer's product storage requirements.

C. Verify that manufacturer required environmental conditions are maintained continually.

D. Verify that surfaces of products exposed to the elements are not adversely affected; that any weathering of finishes is acceptable under requirements of contract documents.

END OF SECTION

SECTION 017000 - PROJECT CLOSE OUT

1. RELATED DOCUMENTS

A. All provisions of the Contract Documents apply to this section. The Contractor(s) shall be responsible for complete familiarity with same.

2. SCOPE

A. Each Contractor shall furnish guarantees, warranties, bonds and release of liens to the Architect, as required under various sections of the Specifications.

B. Each Contractor shall submit one (1) set of blue line drawings indicating on this set of Drawings, "Record Drawing" conditions in red. Further, indicated by letter, all "Record Drawing" conditions different from the Specifications specified. These Drawings and letters shall be submitted to the Architect.

3. FINAL INSPECTION AND ACCEPTANCE

A. When the Contractor is satisfied that all work required by plans and specifications for his division of the contract has been completed, he shall prepare his own punch list and complete it. After he has completed his own punch list, he shall notify the Architect in writing.

B. Upon acceptance of this notification, the Architect and Contractor's Representative will conduct a punch list inspection to determine what items remain in an unacceptable condition. A report of this inspection will be delivered to the Contractor as soon as possible following acceptance of the Contractor's letter of completion.

C. Upon receipt of the list of deficiencies, which shall include a schedule for completion of the items, the Contractor shall take immediate corrective action of all items.

D. The Contractor shall notify the Architect and the Owner, in writing, a minimum of five (5) days prior to the date of Final Inspection.

E. If such inspection proves to be completely satisfactory to the Owner, the construction period shall terminate on date of such Final Inspection, and a certificate of substantial completion shall be completed by the Architect and submitted to the Owner and Contractor for execution.

4. CLEANING UP

A. Contractor shall daily clean up all refuse, rubbish, scrap materials and debris caused by his operations to the end that at all times the site shall present a neat, orderly and workmanlike appearance. Crates and cartons in which materials, equipment, or fixtures are received shall be removed daily.

B. If, in the opinion of the Architect, neatness is not maintained, the Architect may have the area cleaned, and charge the costs to the responsible Contractor. The Architect may pro-rate the cost of clean-up to all Division Contractors if responsibility is not clear, and the Owner may

withhold such charges from amounts owing to Subcontractors and pay the same directly to the persons doing such work.

C. At the completion of the building, the General Contractor, in addition to removal of accumulated rubbish, shall remove stain spots and marks from all exposed surfaces of existing and new construction.

D. All contractors, at the completion of their branch of work, shall remove all surplus material, false work, temporary structures, including foundations thereof, plants of any description and debris of every nature resulting from the operations and put the site in a neat and orderly condition.

5. RELEASE OF LIENS

A. The lien laws of the State of Ohio shall govern all work and materials.

B. The Contractor shall furnish the Owner with each estimate for payment and before final payment is made, a full Release of Lien signed by all Subcontractors and Materialmen associated in any way with the work.

C. If any Subcontractor refuses to furnish a Release or receipt in full, the Contractor may furnish a bond satisfactory to the Owner to Indemnify the Owner against any lien.

D. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all the monies that the latter may have been compelled to pay in discharging such lien including all costs and a reasonable attorney's fee.

6. RECORD DRAWINGS

A. Each Contractor shall keep an accurate record of all deviations from Contract Documents and shall neatly and correctly enter in colored pencil any deviations on drawings affected and shall keep drawings available for inspection. A separate set of drawings will be maintained for each separate Contract.

B. At completion of job and before final approval, Contractor shall make final corrections to drawings and certify to the accuracy of each print by signature thereon and deliver same to the Architect.

END OF SECTION

SECTION 01 71 00 - CLEANING

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Cleaning during construction

B. Dust control

C. Disposal

D. Final Cleaning

1.02 RELATED SECTIONS:

A. Document AIA 201 – General Conditions

B. Section 01 70 00 – Contract Closeout

1.03 QUALITY ASSURANCE:

A. Disposal Requirements: Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface materials to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION:

A. Execute daily cleaning to keep the work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the building daily and from the site periodically and dispose of at legal disposal areas away from the site.

D. Contractor shall keep interior of the building free of stored or unattended combustible material.

3.02 DUST CONTROL:

A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as needed basis until painting is finished.

B. Schedule operations so that dust and other contaminates resulting from cleaning process will not fall on wet or newly-coated surfaces.

3.03 FINAL CLEANING:

A. Employ skilled workmen for final cleaning.

B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, temporary labels and other foreign materials from sight-exposed interior and exterior surfaces.

C. Wash and shine glazing and mirrors.

D. Polish glossy surfaces to a clear shine.

E. Remove broken or scratched glass and replace with new glass.

F. Remove paint droppings, spots, stains and dirt from finished surfaces.

G. Clean plumbing fixtures, hardware, floors and equipment.

H. Ventilating systems.

I. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work area is clean.

J. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

3.04 VENTILATING SYSTEMS:

A. Clean permanent filters and replace disposable filters if units were operated during construction.

B. Clean ducts, blowers and coils if units were operated without filters during construction.

END OF SECTION

SECTION 01 72 00 – PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Owner Representative Documents

B. Maintenance of documents and samples

C. Recording information

D. Submittals

1.02 RELATED SECTIONS:

A. Section 01 30 00 – Submittals

B. Section 01 70 00 – Contract Close-out

1.03 OWNER REPRESENTATIVE DOCUMENTS:

A. Maintain at the site for the Owner one record copy of:

1. Drawings

2. Specification

3. Addenda

4. Change Orders and other modifications to the Contract.

5. Owner Field Orders or written instruction.

6. Approved shop drawings, product data and samples.

7. Field test records.

1.04 MAINTENANCE OF DOCUMENTS AND SAMPLES:

A. Store documents and samples in Contractor’s field office apart from documents used for construction.

B. Provide files and racks for storage of documents.

1. Provide locked cabinet or secure storage space for storage of samples.

C. File documents and samples in accordance with data filing format of the CSI Master Format MP-2.

D. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

E. Make documents and samples available at all times for inspection by Owner.

1.05 RECORDING:

A. Label each document “Project Record” in neat large printed letters.

B. Record information concurrently with construction progress.

1. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction:

1. Depths of various elements of foundation in relation to finish first floor datum.

2. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the structure.

4. Field changes of dimension and detail.

5. Changes made by Addenda, Field Order or by Change Order.

6. Details not on original contract drawings.

7. Engineering changes, including HVAC, electrical, plumbing, fire protection, structural, civil, site and landscape.

D. Failure of Contractor to keep record drawings consistent with construction progress will be considered grounds for withholding payments to Contractor.

E. Specifications and addenda; legibly mark each section to record:

1. Manufacturer, trade name, catalog number, and supplier of each.

2. Product and item of equipment actually installed.

3. Changes made by Field Order or by Change Order.

4. All items recorded as changes on drawings as requested above in Section C.

1.06 SUBMITTALS:

A. At contract close-out, deliver record documents to the Owner.

B. Accompany submittal with transmittal letter in duplicate, containing:

1. Date
2. Project title and number
3. Contractor’s name and address
4. Title and number of each record document
5. Signature of Contractor or his authorized representative

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 017300 - OPERATION & MAINTENANCE DATA

PART 1 - GENERAL

1. RELATED DOCUMENTS

All provisions of the Contract Documents apply to this Section. The Contractor(s) shall be responsible for complete familiarity of same.

2. REQUIREMENTS INCLUDE

A. Format and content of manuals.
B. Instruction of Owner's personnel.

3. RELATED REQUIREMENTS

A. Specified elsewhere:

1. Section 013400 - Shop Drawings, Product Data and Samples
2. Section 017000 - Project Close-Out
3. Individual Specification Sections: Specific requirements for operating and maintenance data.

4. QUALITY ASSURANCE

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

5. FORMAT

A. Prepare in the form of an instructional manual.

B. Binders: Commercial quality, 8-1/2" x 11" three-ring binders with hardback, cleanable, plastic covers, 1" minimum ring size. When multiple binders are used, correlate data into related consistent groupings.

C. Cover: Identify each binder with type or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of project and separate building; identify subject matter of contents.

D. Arrange content by systems, under section numbers and sequence of Table of Contents of this project manual.

E. Provide tabbed fly leaf for each separate product and system, with type description of product and major component parts of equipment.

F. Text: Manufacturer's printed data, or typewritten data on 20 lb. paper.

G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size.

6. CONTENTS, EACH VOLUME

   A. Table of Contents: Provide title of project, names, addresses, and telephone numbers of Architect, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

   B. For Each Product or System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

   C. Product Data: Mark each sheet to clearly identify specific products and components parts, and data applicable to installation; delete inapplicable information.

   D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. (Do not use Project Record Documents as maintenance drawings.)

   E. Type Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

   F. Warranties and Bonds: Bind in copy of each.

7. MANUAL FOR MATERIALS AND FINISHES

   A. Building Products, Applied Materials and Finishes: Include product data with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.

   B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

   C. Moisture-Protection and Weather-Exposed Products: Include product data listing applicable reference standards, chemical composition and details of installation. Provide recommendations for inspections, maintenance and repair.

   D. Additional Requirements: As specified in individual specification sections.

8. MANUAL FOR EQUIPMENT AND SYSTEMS

   A. Each Item of Equipment and Each System: Include description of unit or system and component parts. Give function, normal operating characteristics and limiting conditions. Include performance curves with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

   B. Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications.

   C. Include as-installed color coded wiring diagrams.

D. Operating Procedures: Include start-up, break-in and routine normal operating instructions, and sequences. Include regulation, control, stopping, shut-down and emergency instructions. Include summer, winter and any special operating instructions.

E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting, disassembly, repair and reassembly instructions; and alignment, adjusting, balancing and checking instructions.

F. Provide servicing and lubrication schedule and list of lubricants required.

G. Include manufacturer's printed operation and maintenance instructions.

H. Include sequence of operation by controls manufacturer.

I. Provide original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.

J. Provide as-installed control diagrams by controls manufacturer.

K. Provide Contractor's coordination drawings with as-installed color coded piping diagrams.

L. Provide charts of valve tag numbers with location and function of each valve, keyed to flow, and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices and recommended quantities to be maintained in storage.

N. Additional Requirements: As specified in individual specification sections.

O. Provide a listing of Table of Contents for Design Data with tabbed fly sheet and space for insertion of data.

9. INSTRUCTION OF OWNER PERSONNEL

A. Before final inspection, instruct Owner's designated personnel in operation, adjustment and maintenance of products, equipment, and systems at agreed upon times.

B. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

C. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

10. SUBMITTALS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of work. Architect will review draft and return one copy with comments.

B. For equipment or component parts of equipment put into service during construction and operated by owner, submit documents within 10 days after acceptance.

C. Submit one coy of completed volumes in final form 15 days prior to final inspection with Architect comments. Revise contents of documents prior to final submittal.

D. Submit three copies of revised volumes of data in final form within 10 days after final inspection.

E. Contractor shall modify any of the above deliverable requirements to meet special owner requirements.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

UPPER VALLEY CAREER CENTER
HEALTH SCIENCE BUILDING ADDITION
EARLY SITE AND RESTROOM PROJECT
233448.00

MARCH 2024

AutoCAD/Revit Data Files

Dear Contractor:

You have requested an AutoCAD or Revit file(s) for the above referenced job. We are happy to furnish this to you under the conditions herein below set forth:

- You are requesting these drawings solely for the purpose of coordinating and expediting your work on this specific project and for no other purpose.
- The files on these disks are not Contract Drawings; they are work product tools used to produce the Contract Drawings. As such, they may contain information that may or may not be consistent with the Contract Drawings.
- Ownership of the information to be provided to you as herein set forth is and shall remain the sole and exclusive property of Levin Porter Associates Inc.
- Levin Porter Associates Inc makes no representation or warranty, expressed or implied, as to the quality or content of the information of these files.

Upon the signature below by an authorized representative of your organization which constitutes acceptance of the above terms under which files noted are being tendered to you, and return of the signed letter, we will immediately forward the requested information to you.

_____

Name Company

Sincerely,

Robert T. Brown, AIA, NCIDQ
LEVIN PORTER ASSOCIATES INC

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of a building or structure.
2. Salvage of existing items to be reused or recycled.

1.2 DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and 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 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site.

1.5 CLOSEOUT SUBMITTALS

A. Inventory of items that have been removed and salvaged. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

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

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. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. 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.

G. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

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. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate, and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. Inventory and record the condition of items to be removed and salvaged.

3.2 PREPARATION

A. Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent rooms and facilities to remain.

C. Temporary Shoring: 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.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. 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.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. 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.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly.

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. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area **designated by Owner**
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition **and cleaned** and reinstalled in their original locations after selective demolition operations are complete.

3.5 CLEANING

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

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.

B. Burning: Do not burn demolished materials.

C. 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 033543 - POLISHED CONCRETE FINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes polished concrete finishing.

B. Related Sections
1. 03 15 16 – Concrete Construction Joints

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of product requiring color selection.

1.3 QUALITY ASSURANCE

A. Field Sample Panels: After approval of samples, produce field sample panels to demonstrate the approved range of selections made under Sample submittals. Produce a minimum of three sets of full-scale panels, approximately 48 by 48 inches (1200 by 1200 mm) minimum, to demonstrate the expected range of finish, color, and appearance variations.

1. Locate panels as indicated or, if not indicated, as directed by Architect.
2. Maintain field sample panels during construction in an undisturbed condition as a standard for judging the completed Work.
3. Demolish and remove field sample panels when directed.

PART 2 - PRODUCTS

2.1 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatments for Polished Concrete Finish: Clear, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and is suitable for polished concrete surfaces.

B. Basis-of-Design Product: The design for the Liquid Floor treatment is based on the manufacturer identified below. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
1. Basis-of-Design: Euclid Chemical Company
   a. Euco Diamond Hard
   b. Liquid Densifier and Sealer for Concrete.

c. Used in conjunction with Bellatrix Premium Concrete Enhancer
2. H&C Decorative Concrete Products
3. Prosoco, Inc

PART 3 - EXECUTION

3.1 POLISHING

A. Polish: Level 2: High sheen, 800 grit

B. Apply polished concrete finish system to cured and prepared slabs.

1. Machine grind floor surfaces to receive polished finishes level and smooth.
2. Apply penetrating liquid floor treatment for polished concrete in polishing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.
3. Continue polishing with progressively finer-grit diamond polishing pads to gloss level, to match approved mockup.
4. Control and dispose of waste products produced by grinding and polishing operations.
5. Neutralize and clean polished floor surfaces.

END OF SECTION 033543

SECTION 040120 - MAINTENANCE OF UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes maintenance of unit masonry consisting of brick clay masonry restoration and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Repointing joints.
3. Preliminary cleaning, including removing plant growth.
4. Cleaning exposed unit masonry surfaces.

1.2 UNIT PRICES

A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."

1.3 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

B. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For the following:
1. Provisions for expansion joints or other sealant joints.

C. Samples: For each exposed product and for each color and texture specified.

1.5 QUALITY ASSURANCE

A. Restoration Specialist Qualifications: Engage an experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.

1. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for repair work.

2. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and cleaning work is in progress.
3. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing.

B. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Sand: ASTM C 144 unless otherwise indicated.

1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
2. For pointing mortar, provide sand with rounded edges.
3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.

E. Mortar color shall match the color of the existing mortar at adjacent areas.

F. Water: Potable.

2.2 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).

C. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABR Products, Inc.

b. Diedrich Technologies Inc.
c. Dumond Chemicals, Inc.
d. EaCo Chem, Inc.
e. Hydroclean, Hydrochemical Techniques, Inc.
f. Price Research, Ltd.
g. PROSOCO.

2.3 ACCESSORY MATERIALS

A. Setting Buttons: Resilient plastic buttons, nonstaining to masonry, sized to suit joint thicknesses and bed depths of masonry units without intruding into required depths of pointing materials.

2.4 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.

2. Mortar color shall match the color of the existing mortar at adjacent areas.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mortar Proportions: Mix mortar materials in the following proportions:

1. Pointing Mortar for Brick: 1 part portland cement, 2 parts lime, and 6 parts sand

a. Add mortar pigments to produce mortar colors required to match the color of the existing mortar at adjacent areas.

2. Rebuilding (Setting) Mortar: Same as pointing mortar except mortar pigments are not required].

3. Rebuilding (Setting) Mortar: Comply with ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime.

2.5 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.

B. Acidic Cleaner Solution for Brick: Dilute with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.

B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Keep wall wet below area being cleaned to prevent streaking from runoff.

3.2 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

D. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.

E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

F. Replace removed damaged brick with other removed brick in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.

G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. (30 g/194 sq. cm per min.). Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.
3. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.3 MASONRY UNIT PATCHING

A. Patching Bricks:

1. Remove loose material from masonry surface. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least 1/4 inch (6 mm) thick, but not less than recommended by patching compound manufacturer.
2. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of masonry unit.
3. Mix patching compound in individual batches to match each unit being patched.
4. Rinse surface to be patched and leave damp, but without standing water.
5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
6. Place patching compound in layers as recommended by patching compound manufacturer, but not less than 1/4 inch (6 mm) or more than 2 inches (50 mm) thick. Roughen surface of each layer to provide a key for next layer.

7. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the masonry unit. Shape and finish surface before or after curing, as determined by testing, to best match existing masonry unit.
8. Keep each layer damp for 72 hours or until patching compound has set.

3.4 CLEANING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner; work from [bottom to top] [top to bottom] of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.

B. Use only those cleaning methods indicated for each masonry material and location.

1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.

    a. Equip units with pressure gages.

3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
5. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.

C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

D. Water-Spray Application Method: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.

E. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush[or spray] application.[Do not spray apply at pressures exceeding 50 psi (345 kPa).] Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.

F. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

3.5 PRELIMINARY CLEANING

A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing to dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.

1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and calking with alkaline paint remover.
    a. Comply with requirements in "Paint Removal" Article.
    b. Repeat application up to two times if needed.
3. Remove asphalt and tar with solvent-type paint remover.
    a. Comply with requirements in "Paint Removal" Article.
    b. Apply paint remover only to asphalt and tar by brush without prewetting.
    c. Allow paint remover to remain on surface for 10 to 30 minutes.
    d. Repeat application if needed.

3.6 CLEANING MASONRY

A. Acidic Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply cleaner to masonry in two applications by brush or low-pressure spray. Let cleaner remain on surface for period indicated below:
    a. As recommended by chemical-cleaner manufacturer.
3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

3.7 REPOINTING MASONRY

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.
2. Joints where mortar is missing or where they contain holes.

3. Cracked joints where cracks can be penetrated at least 1/4 inch (6 mm) by a knife blade 0.027 inch (0.7 mm) thick.
4. Cracked joints where cracks are 1/8 inch (3 mm) or more in width and of any depth.
5. Joints where they sound hollow when tapped by metal object.
6. Joints where they are worn back 1/4 inch (6 mm) or more from surface.
7. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
8. Joints where they have been filled with substances other than mortar.
9. Joints indicated as sealant-filled joints.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of joint width plus 1/8 inch (3 mm), but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.

    a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders.
    b. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.

5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.

    a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.

6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.8 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

END OF SECTION 040120

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:
   1. Concrete masonry units (CMUs).
   2. Mortar and grout.
   3. Reinforcing steel.
   4. Masonry joint reinforcement.
   5. Ties and anchors.
   6. Miscellaneous masonry accessories.
   7. Cavity-wall insulation.

B. Products installed, but not furnished, under this Section include the following:
   1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section "Structural Steel Framing".

1.2 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

B. Cavity Mortar Protection: Used in conjunction with flashing and weep vents to provide a system to properly evacuate moisture from a masonry cavity wall by providing a continuous path for incidental moisture to escape from weep vents.

1.3 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths (f'_m) at 28 days.

B. 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 Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

C. Regulatory Requirements: Comply with the provisions of the following codes, specifications, and standards, except as otherwise shown or specified:
   1. ACI 530-ASCE 5 Building Code Requirements For Masonry Structures.
   2. ACI 530.1/ASCE 6 Specifications for Masonry Structures.
      a. Maintain one copy of the standard in project field office at all times during construction. Contractor's supervisory personnel shall be thoroughly familiar with this material as it applies to the project.
   3. National Concrete Masonry Association (NCMA)
      a. NCMA TEK Bulletin 3-1A "Cold Weather Concrete Masonry Construction".
      b. NCMA TEK Bulletin 3-1C "All Weather Concrete Masonry Construction".
      c. NCMA TEK Bulletin 3-2 "Grouting for Concrete Masonry Walls".
      d. NCMA TEK Bulletin 3-3A "Reinforced Concrete Masonry".
      e. NCMA TEK Bulletin 3-4B "Bracing Concrete Masonry Walls During Construction".

f. NCMA TEK Bulletin 5-2A “Clay and Concrete Masonry Banding Details”.
g. NCMA TEK Bulletin 7-1A “Fire Resistance Rating of Concrete Masonry Assemblies”.
h. NCMA TEK Bulletin 8-2A “Removal of Stains from Concrete Masonry.”
i. NCMA TEK Bulletin 8-3A “Control and Removal of Efflorescence.”
j. NCMA TEK Bulletin 9-1 “Mortars for Concrete Masonry.”
k. NCMA TEK Bulletin 10-1A “Crack Control in Concrete Masonry Walls – Empirical Method”.
l. NCMA TEK Bulletin 10-2B “Control Joints for Concrete Masonry Walls”.
m. NCMA TEK Bulletin 10-4 “Crack Control for Concrete Brick and Other Concrete Masonry Veneers”.
n. NCMA TEK Bulletin 12-4C “Steel Reinforcement for Concrete Masonry”.
o. NCMA TEK Bulletin 14-2 “Reinforced Concrete Masonry”.
p. NCMA TEK Bulletin 19-4 “Flashing Concrete Masonry”.
q. NCMA TEK Bulletin 19-4A “Flashing Strategies for Concrete Masonry Walls”.
r. NCMA TEK Bulletin 19-5 “Use of Flashing in Concrete Masonry Walls”.

4. American Society for Testing and Materials (ASTM)
   a. ASTM C33-97 “Concrete Aggregates”.
   b. ASTM C90-97a “Loadbearing Concrete Masonry Units”.
   c. ASTM C91 “Masonry Cement”.
   d. ASTM C140-75 (R-1988) “Standard Methods of Sampling and Testing Concrete Masonry Units”.
   e. ASTM C144 “Aggregate for Masonry Mortar”.
   f. ASTM C150 “Portland Cement”.
   g. ASTM C207 “Hydrated Lime for Masonry Purposes”.
   h. ASTM C270 “Mortar of Unit Masonry”.
   i. ASTM C426-96a “Testing for Drying Shrinkage of Concrete Block”.
   j. ASTM C780 “Preconstruction and Construction Evaluation of Mortars Plain and Reinforced Unit Masonry”.
   k. ASTM C979 “Pigments for Integrally Colored Concrete”.
   l. ASTM E514 “Water Penetration and Leakage Through Masonry”.
5. International Masonry Industry All-Weather Council (IMIAWC).
   a. “Recommended Practices and Guide Specifications for Cold Weather Masonry Construction – 1993”.
6. Underwriters’ Laboratory Inc. (UL)
   a. UL “Building Materials Directory”.
   b. UL 618 “Standard for Concrete Masonry”.
7. Brick Institute of America (BIA)
   a. BIA Technical Notes No. 1 – Revised 1992: All weather construction.
   b. BIA M1-88: Specifications for Portland Cement Lime Mortar for Brick Masonry.
   c. BIA Technical Notes No. 7 – Water Penetration Resistance – Design and Detail.
   d. BIA Technical Notes No. 20 – Revised 1990: Cleaning Brick Masonry.
   e. BIA Technical Notes No. 28B – Revised 1987: Brick Veneer.

1.4 SUBMITTALS

A. Shop Drawings: For the following:
   1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.

2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.

B. Samples for Initial Selection: For the following:
   1. Decorative concrete masonry units, in the form of small-scale units.
   2. Face brick, in the form of straps of five or more bricks.
   3. Weep holes/vents.

C. Samples for Verification: For each type and color of the following:
   1. Decorative concrete masonry units.
   2. Weep holes/vents.
   3. Accessories embedded in masonry.

D. Quality Assurance/Control Submittals:
   1. Product Data: For each type of product indicated, including but not limited to:
      a. Cavity wall insulation.
      b. Integral water repellent.
   2. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
      a. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing. See drawings for mockup panel details.
   3. Qualification Data: For testing agency.
   4. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
      a. Masonry units.
         1) Provide material test reports substantiating compliance with requirements, if requested.
         2) For bricks, include size-variation data verifying that actual range of sizes falls within specified tolerances.
         3) For exposed brick, include material test report for efflorescence according to ASTM C 67.
         4) For surface-coated brick, include material test report for durability of surface appearance after 50-cycles of freezing and thawing per ASTM C 67.
      b. CMU: Upon regular presentation within past 12 months of representative units by approved manufacturer, a test report from an independent laboratory showing resultant weight, compressive strength (based on net area), and water absorption properties, as well as adherence to standards where so specified, for:
         1) Each proposed type and size of concrete masonry units.
         2) Test reports shall conform to ASTM C140 and shall include:
            a) Name of Manufacturer
            b) Date of Manufacture of Test Specimen
            c) Dimension Measurements (in.)
            d) Calculated Gross Area (sq.in.)
            e) Calculated Net Area (sq.in.)

f) Total Load (lbs.)
g) Net Unit Load (psi)
h) Sample Weight (lbs.)
i) Dry Weight (lbs.)
j) Wet Weight (lbs.)
k) Immersed Weight (lbs.)
l) Density (pcf)
m) Moisture Content (%)
n) Absorption (%)
o) Linear Shrinkage Coefficient (%)

c. CMU: Submit compression test results from an independent testing laboratory showing the compressive strength of each type and size of concrete masonry units delivered to the construction site during the first fifteen days of masonry construction. Submit additional tests from each type and size of concrete masonry units for each 10,000 sq.ft. of concrete masonry wall constructed. The independent testing laboratory is to select units to be tested from materials stockpiled on the Project site.
d. Cementitious materials. Include brand, type, and name of manufacturer.
e. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
f. Grout mixes. Include description of type and proportions of ingredients.
g. Reinforcing bars.
h. Joint reinforcement.
i. Anchors, ties, and metal accessories.

5. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
   a. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
   b. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement. For both fine and course grouts including complete identities and proportions of ingredients.
      1) Weight of each ingredient including water.
      2) Measured slump.
      3) Water/cement ratio.
      4) Sieve analysis for aggregates.
6. 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 Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
7. Certification: Firm shall have at least five years experience in placing reinforced masonry wall systems and will assign supervision of installation only to personnel able to show evidence of current, “Grouting and Reinforcing Certification” by the International Masonry Institute as a “Certified Grout Installer” or having successfully completed the IMI training and certification for “Grouting and Reinforcing Certification.”
   a. The “certified” supervisor responsible for the placement of reinforced assemblies, will be present at the grout pour location at the time of each grout pour.
8. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.

B. 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, through one source from a single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate. Do not change source or brands of masonry mortar materials during the course of the Work.

D. Preconstruction Testing Service: Contractor will engage a qualified independent testing agency to perform preconstruction testing indicated below.
   1. Clay Masonry Unit Test: For each type of unit required, per ASTM C 67.
   2. Concrete Masonry Unit Test: For each type of unit required, per ASTM C 140.
   3. Grout Test (Compressive Strength): For each mix required, per ASTM C 1019.

E. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 01 Section "Quality Requirements" for mockups.
   1. Build 4’-0” x 4’-0” sample panels verify location with accuracy.
   2. Clean exposed faces of panels with masonry cleaner indicated.
   3. Protect approved sample panels from the elements with weather-resistant membrane.
   4. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.
      a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.
   5. Prior to starting general masonry cleaning, prepare mock-up for cleaning using the same cleaning materials and methods proposed for the Work, and under same weather conditions to be expected during cleaning. Obtain A/E's acceptance of visual qualities before proceeding with masonry restoration. Record cleaning process and results of all testing.
      a. Test materials and methods on samples of adjacent nonmasonry materials for possible reaction with cleaning materials, except where materials and methods are known to have a deleterious effect on such materials.
      b. Allow a waiting period of the duration indicated, but not less than 7 calendar days, after completion of sample cleaning to permit a study of sample panels for negative reactions.
   6. Protect accepted mockups from the elements with weather-resistant membrane.
   7. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
      a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.

b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.

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

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Assume responsibility for acceptance of masonry units delivered to site being in compliance with specified ASTM requirements for chippage and dimensional tolerances.

B. 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.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1. Stock pile and handle aggregates to prevent contamination from foreign materials. Store different aggregates separately.

E. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 PROJECT 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 and hold cover securely in place.
2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
3. Rotate and flip scaffolding boards each day to prevent mortar staining.

B. This structure is designed to be self-supporting and stable after the building is fully completed. Protect masonry walls against wind damage by bracing as required until support of walls is integral with the completed building structure. This includes the addition of whatever temporary bracing, guys, or tie-downs that might be necessary. Such material is not shown on

the Drawings. If applied, they shall be removed as conditions permit, and shall remain the Contractor's property.

1. Safety: It is solely the Contractor's responsibility to follow all applicable safety codes and regulations governing this Work.
2. Load application after building masonry columns, piers, or walls
    a. Do not apply uniform design floor or roof loading for at least 12 hours.
    b. Do not apply concentrated loads for at least 3 days.

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 ACI 530.1/ASCE 6/TMS 602 with special emphasis on the following:

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
    a. To assure mortar temperatures between 40 degrees F and 120 degrees F until used, heat mixing water or aggregates when air temperature is between 32 degrees F and 40 degrees F. When the air temperature is between 25 degrees F and 32 degrees F, heat both water and aggregate.
    b. Do not heat water or sand above 160 degrees F.
2. Comply with the requirements of the governing code and with the "Construction and Protection Recommendations for Cold Weather Masonry Construction" of the Technical Notes of Brick and Tile Construction by the Brick Institute of America (BIA) and International Masonry Industry All-Weather Council, "Recommended Practices and Guide Specifications for Cold Weather Masonry Construction."

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602 and the following:

1. Masonry construction performed when ambient temperature exceeds 100 degrees F (or 90 degrees F with wind velocities greater than 8 mph) shall conform to the following requirements:
    a. Store materials in cool, shaded location.
    b. Cover aggregate stockpiles with black plastic sheet to retard the evaporation of moisture.
    c. Cool reinforcing steel, metal accessories, wheelbarrows, mixers and mortar boards by flushing with water.
    d. Wet high-suction brick.
    e. Increase lime and/or cement content to maximum allowed under ASTM C270 for mortar type specified.

f. Increase water content of mortar and grout as needed.
g. Spread mortar beds no more than 4 feet ahead of masonry, and set units within one minute of spreading mortar.
h. Moist cure masonry by water fog spray after tooled joints have set.
i. Cover walls to retard evaporation.
j. Schedule work to avoid hottest part of day.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

B. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. The "Substitution Request Form" and complete technical data for evaluation must accompany request for A/E's approval. All materials for evaluation must be received by the Construction Manager at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.2 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not uses units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.3 CONCRETE MASONRY UNITS (CMUs)

A. Shapes: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners (including 45 degree inside and outside corners), jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide bullnose units for outside corners and at sills, unless otherwise indicated or sill is indicated to receive additional finish materials.
a. At base of wall and where indicated (first CMU course above floor), provide exposed square edge external corners. Above base transition square edge to the bullnose above by grinding.
3. Provide two core type masonry units where required to receive vertical reinforcing.
4. Bond beam units shall be such that where two reinforcing steel bars are required in the bond beams, bars may be located not greater than 2-5/8 inch from both faces of the unit. Bond beam units that do not allow the two bars to be separated and to be within 2 5/8" of each face will not be acceptable.

B. Integral Water Repellent: Provide units made with integral water repellent for exterior exposed units.
   1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E 514, with test period extended to 24 hours, show no visible water or leaks on the back of test specimen.
      a. Products:
         1) Grace Construction Products; Dry-Block.
         2) BASF, Inc.; Rheopel.
         3) Acme-Hardesty Co., Acme-Shield.
         4) Krete Industries; Krete HQ Plus.
         5) Euclid Chemical Co., Eucon Blocktite.
         6) ACM Chemistries Inc.; Rain Bloc.

C. Concrete Masonry Units: ASTM C 90.
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
   2. Weight Classification: Contractor shall have the option of using any weight, lightweight, medium weight, or normal weight, provided texture of existing units can be matched; if applicable, and same weight is used throughout wythe. Contractor may use different weights in multiple wythes, but must be consistent within each wythe.
   3. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.
      a. Where special finishes are indicated, provide units with exposed faces of the following general description matching color and texture of A/E's sample.

2.4 MASONRY LINTELS

A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from specially formed “u” shaped lintel units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.5 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III which 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 complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.

D. Masonry Cement: ASTM C 91, to be used at masonry veneer only.
   1. Products:
      a. Essroc, Italcementi Group; Brixment or Velvet.
      b. Holcim (US) Inc.; Mortamix Masonry Cement or Rainbow Mortamix Custom Buff Masonry Cement or White Mortamix Masonry Cement.

c. Lafarge North America Inc.; Magnolia Masonry Cement or Lafarge Masonry Cement or Trinity White Masonry Type S or Trinity White Masonry Type N.
d. Lehigh Cement Company; Lehigh Masonry Cement or Lehigh White Masonry Cement.
e. National Cement Company, Inc.; Coosa Masonry Cement.
f. CEMEX; Richcolor and Richmortar.

E. Mortar Cement: ASTM C 1329.

F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.
1. Products:
a. Bayer Corporation, Industrial Chemicals Div.; Bayferrox Iron Oxide Pigments.
b. Davis Colors; True Tone Mortar Colors.
c. Solomon Grind-Chem Services, Inc.; SGS Mortar Colors.

G. Colored Cement Product: Packaged blend made from Portland cement and lime, masonry cement, or mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
2. Pigments shall not exceed 10 percent of Portland cement by weight.
3. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
4. Products:
a. Colored Portland Cement-Lime Mix:
1) Capital Materials Corporation; Riverton Portland Cement Lime Custom Color.
2) Holcim (US) Inc.; Rainbow Mortamix Custom Color Cement/Lime.
3) Lafarge North America Inc.; Eaglebond.
4) Lehigh Cement Company; Lehigh Custom Color Portland/Lime Cement.
5) Glen-Gery Corp., Color Mortar Blend
6) Essroc; Salyor’s PLUS
7) CEMEX; PCL
8) Lone Star; Portland Lime Mortar Cement.
b. Colored Masonry Cement:
1) Capital Materials Corporation; Flamingo Color Masonry Cement.
2) Essroc, Italcementi Group; Brixment-in-Color.
3) Holcim (US) Inc.; Rainbow Mortamix Custom Color Masonry Cement.
4) Lafarge North America Inc.; Magnolia Masonry Cement.
5) Lehigh Cement Company; Lehigh Custom Color Masonry Cement.
6) National Cement Company, Inc.; Coosa Masonry Cement.
7) CEMEX; Richcolor Masonry Cement.

H. The mortar color shall match the existing mortar color used in the existing adjacent face brick.

I. Aggregate for Mortar: ASTM C 144.
1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone, as required for mix design.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color, where required for mix design.

J. Aggregate for Grout: ASTM C 404.
1. Fine Aggregates: ASTM C404, clean, sharp, natural sand free from loam, clay lumps, or other deleterious substances.
2. Coarse Aggregates: ASTM C404, clean, uncoated, pea gravel containing no clay, mud, loam, or foreign matter. Maximum aggregate size 3/4 inch.

K. Epoxy Pointing Mortar: ASTM C 395, epoxy-resin-based material formulated for use as pointing mortar for limestone (and approved for such use by manufacturer of units); in color indicated or, if not otherwise indicated, as selected by Architect from manufacturer's colors.

L. 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.
1. Products:
a. Addiment Incorporated; Mortar Kick.
b. Euclid Chemical Company; Accelguard 80.
c. Grace Construction Products; Morset.
d. BASF, Inc.; Trimix-NCA.

M. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.
1. Products:
a. Grace Construction Products; Dry-Block Mortar Admixture.
b. BASF, Inc.; Rheopel Mortar Admixture.
c. Krete Industries, Krete Guard Mortar Mix.
d. Euclid Chemical Co.; Blocktite Mortar Admixture.

N. Water: Clean, free of deleterious materials which would impair strength or bond and potable.

2.6 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615 or ASTM A 996, Grade 60 (Grade 420).
1. Size, length, and spacing shall be as indicated.
2. Where No. 3 and larger are indicated, they shall be deformed steel, conforming to ASTM A615, Grade 60.
3. Use #4 spacer bars at 48 inch spacing connected to longitudinal reinforcing bars in concrete masonry bond beams to hold bars in proper location.

B. Masonry Joint Reinforcement, General: ASTM A 951 and as follows:
1. Provide welded wire units prefabricated in straight lengths of not less than 10 foot, with matching corner ("L") and intersection ("T") units.

2. Fabricate from cold-drawn steel wire complying with ASTM A82, with deformed or embossed continuous side rods and plain cross-rods, with unit width of 1-1/2 to 2 inches less than thickness of wall or partition.
3. Wire shall be mill galvanized and in accord with the following:
    a. Joint reinforcement, interior walls or exposed to relative humidity less than or equal to 75 percent.
        1) ASTM A641, mill galvanized (0.10 oz. per sq.ft.)
    b. Wire ties or anchors in interior walls or exposed to relative humidity less than or equal to 75 percent
        1) ASTM A641 (0.35 oz. per sq.ft.)
    c. Joint reinforcement, wire ties, or anchors in exterior walls or a mean relative humidity exceeding 75 percent
        1) ASTM A153, Class B (1.50 oz. per sq.ft.)
    d. Sheet metal ties or anchors, interior walls or exposed to relative humidity less than or equal to 75 percent
        1) ASTM A653, G60 (0.60 oz. per sq.ft.)
    e. Sheet metal ties or anchors in exterior walls or a mean relative humidity exceeding 75 percent
        1) ASTM A153, Class B (1.50 oz. per sq.ft.)
    f. Steel plates and bars
        1) ASTM A153, Class B
4. For single wythe interior CMU walls, provide ladder type joint reinforcing fabricated with two W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.
5. For interior walls consisting of CMU backup and face brick or CMU veneer, provide ladder type joint reinforcing fabricated with three W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.
6. For multi-wythe interior walls consisting of two wythes of CMU, provide ladder type joint reinforcing fabricated with four W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.
7. Multi-wythe exterior walls consisting of CMU backup, insulated cavity, and exterior face brick or CMU veneer.
    a. When both wythes are to be constructed simultaneously:
        1) Provide ladder type joint reinforcing fabricated with three W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.
    b. When each wythe is to be constructed separately:
        1) Backup Wythe
            a) Provide adjustable ladder type joint reinforcing fabricated with two W1.7 or 0.148 inch steel side rods, W1.7 or 0.148 inch cross rods, 3/16 inch eyes and 3/16 inch double legged pintles. Longitudinal rods shall be spaced for each face shell of CMU; eye sections shall extend into wall's cavity, and pintles shall rest upon bed joints of veneer. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.
        2) Veneer Wythe (CMU)

a) Provide ladder type horizontal joint reinforcing fabricated with two W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods continuous joint. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.

c. For multi-wythe walls in which the coursing in the face wythe does not align vertically with the coursing in the backup wythe use:
   1) Stone Tab 3700 with 1100 triangular ties; Wire-Bond, Charlotte, North Carolina.
   2) TIE-HVR-195VB; Hohmann & Barnard, Inc., Hauppauge, New York.
   3) Stone Anchor; Dur-O-Wall, Inc., Arlington Heights, Illinois.

d. For banding details in which CMU and clay masonry are combined:
   1) Refer to NCMA TEK 5-2A.
      a) Provide ladder type horizontal joint reinforcing fabricated with two W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Reinforce joints separating two different materials.

8. For foundation walls consisting of two wythes of CMU, provide ladder type joint reinforcing fabricated with four W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Joint reinforcing shall be placed in every CMU joint or no more than 8 inches o.c. Side rods shall align with face shells of CMU.
9. For single wythe foundation walls, provide ladder type joint reinforcing fabricated with two W1.7 or 0.148 inch steel side rods and W1.7 or 0.148 inch cross rods. Joint reinforcing shall be placed in every CMU joint or no more than 8 inches o.c.
10. For joint reinforcing in walls, other than those described above, refer to Drawings for particular requirements.
11. All ladder type joint reinforcing shall have cross rods spaced at 16 inches o.c.

2.7 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with subparagraphs below, unless otherwise indicated.
   1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 641, Class 1 coating, provide in interior walls where humidity is less than 75 percent.
   2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating, unless otherwise noted.
   3. Galvanized Steel Sheet: ASTM A 653, Commercial Steel, G60 (Z180) zinc coating, provide in interior walls where humidity is less than 75 percent.
   4. Steel Sheet, Galvanized after Fabrication: ASTM A 1008, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153, unless otherwise noted.
   5. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
   1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.
   2. Tie Section for Steel Frame: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.188-inch diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.
   3. Connector Section for Concrete: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.097-inch thick, steel sheet, galvanized after

fabrication. 0.064-inch thick, galvanized sheet may be used at interior walls, unless otherwise indicated.

C. Partition Top anchors: 0.097-inch thick metal plate with 3/8-inch diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

D. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins, unless otherwise indicated.
   1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153.

E. Stone Anchors: Fabricate dowels, cramps, and other stone anchors from stainless steel.

F. Adjustable Masonry-Veneer Anchors: Provide either screw-attached, masonry-veneer anchors with separate horizontal reinforcing.
   1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
      a. Structural Performance Characteristics: Capable of withstanding a 100-lbf (445-N) load in both tension and compression without deforming or developing play in excess of 0.05 inch.
   2. Contractor's Option: Unless otherwise indicated, provide any of the following types of anchors:
   3. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
      a. Fabricate sheet metal anchor sections and other sheet metal parts from 0.067-inch thick, steel sheet, galvanized after fabrication.
      b. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.188-inch diameter, hot-dip galvanized steel wire.
      c. Products:
         1) Dayton Superior Corporation, Dur-O-Wal Division; D/A 213 or D/A 210 with D/A 700-708.
         2) Heckmann Building Products Inc.; 315-D with 316 or Pos-I-Tie.
         3) Hohmann & Barnard, Inc.; DW-10, DW-10HS or DW-10-X.
         4) Wire-Bond; 1004, Type III or RJ-711.
   4. Drill Screws: Provide either of the following types:
      a. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C 954 except manufactured with hex washer head and neoprene washer, No. 10 diameter by length required to penetrate steel stud flange with not less than 3 exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours per ASTM B 117.
         1) Products:
            a) ITW Buildex; Teks Maxiseal with Climaseal finish.
            b) Textron Inc., Textron Fastening Systems; Elco Dril-Flex with Stalgard finish.
            c) Wire-Bond; 4000 with Climaseal finish.
      b. Stainless-Steel Drill Screws for Steel Studs: Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene washer,

No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads.

1) Products:
   a) Dayton Superior Corporation, Dur-O-Wal Division; Stainless Steel SX Fastener.
   b) ITW Buildex; Scots long life Teks.
   c) ITW Buildex; Teks Maxiseal with Climaseal finish.
   d) Textron Inc., Textron Fastening Systems; Elco Dril-Flex with Stalgard finish.
   e) Wire-Bond; SFS Stadler SX Fastener.

2.8 MISCELLANEOUS ANCHORS

A. Stabilization Anchors: Provide where masonry walls intersect concrete or existing masonry walls.
   1. Products:
      a. D/A 2200; Dur-O-Wal, Inc.
      b. Slip Set Stabilizer; Hohmann & Barnard, Inc.
      c. 1700; Wire-Bond

B. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of dimensions indicated.

C. Intersecting Masonry Wall Joint Reinforcing: Where interior masonry walls supported on slabs intersect masonry walls, provide hot dip galvanized 1/2 inch by 16 gauge mesh ties spanning horizontally.
   1. Products:
      a. No. 269 Wire Mesh Wall Tie; Dur-O-Wal, Inc.
      b. #MWT Mesh Wall Tie; Hohmann & Barnard, Inc.
      c. Wire Mesh 269; Heckman Building Products
      d. Wire Mesh Tie; Wirebond

2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler/Thermal Break: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene or urethane.
   1. Products:
      a. Neo-Seal IV 2218-3; Williams Products, Inc.
      b. Rapid Soft-Joint/Expansion Joint D/A 2010; Dur-O-Wal, Inc.
      c. #NS-Closed Cell Neoprene Sponge; Hohmann and Barnard, Inc.
      d. Neocell; IPCO
      e. #NS-Closed Cell; National Construction Materials Corp.

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, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Weep/Vent Products: Use one of the following, unless otherwise indicated:
1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
   a. Products:
      1) Advanced Building Products Inc.; Mortar Maze weep vent.
      2) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
      3) Heckmann Building Products Inc.; No. 85 Cell Vent.
      4) Hohmann & Barnard, Inc.; Quadro-Vent.
      5) Wire-Bond; Cell Vent, 3601.

E. Cavity Drainage Material: Provide the following configuration:
1. Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
   a. Strips, full-depth of cavity and 10 inches (250 mm) wide, with dovetail shaped notches 7 inches (175 mm) deep that prevent mesh fro, being clogged with mortar droppings.
   b.
2. 40 mil polymeric reinforced, UV stable flashing membrane, extending 18” up the surface of all the back-up material. Provide factory formed inside and outside corners.
3.
4. 28-gauage, 304 stainless steel rolled and hemmed drip edge, attached to the membrane flashing, extending ½” beyond the face of the masonry veneer.
5.
6. 1” x 1/8” aluminum termination bar, for securing the flashing membrane to the back-up material.
7.
8. Weep / Vent product, as specified in this Section.
9.
10. Products:
    a. Advanced Building Products Inc.; Mortar Break.
    b. Archovations, Inc.; CavClear Masonry Mat.
    c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
    d. Mortar Net USA, Ltd.; Mortar Net.
    e. Hohman & Barnard Inc., Mortar Net.
    f. Sandell; Mortar Web.
    g. Keene Building Products, Driwal Mortar Deflection/Driwall Masonry Vent System.

F. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.
1. Products:
   a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
   b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.

c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

G. Column Isolation: Around all columns in masonry walls, provide 1/4 inch minimum isolation material to prevent the masonry from coming in contact with the displaced column during loading and to prevent mortar from being within the same joint.
1. Contractor may provide standard column boxboard in lieu of wrap.
2. Products:
a. Ceramar Flexible Foam; W.R. Meadows, Inc.
b. Econ-O-Foam; Williams Products
c. Nomaboard; Nomaco Inc.
d. Column Backboard; Williams Products.

H. Grout Stop: Fiberglass, galvanized steel, or polypropylene screen.
1. Products:
a. DA1015 DUR-O-STOP; Dur-O-Wall, Inc.
b. Metal Lath 268; Heckmann Building Products, Inc.
c. MGS - Mortar/Grout Screen; Hohmann & Barnard, Inc.
d. Grout Stop 3612; Wire-Bond

2.10 MASONRY CLEANERS AND ACCESSORIES

A. Sand for Acoustical Fill:
1. Clean, dry, and acceptable to A/E.

B. Preformed Expansion Joint Filler: Provide closed cell sponge neoprene expansion joint filler conforming to ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated.

C. Bituminous Coating: Cold applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers, or cold applied asphalt emulsion complying with ASTM D1187, Type II.

D. Masonry Cleaners
1. Proprietary Acidic Cleaner: Manufacturer's standard strength, general purpose cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from masonry surfaces of type indicated below without discoloring or damaging masonry surfaces; expressly approved for intended use by manufacturer of masonry units being cleaned.
a. For brick masonry not subject to metallic oxidation stains, use formulation consisting of a concentrated blend of surface acting acids, chelating, and wetting agents.
1) Products:
a) Sure Klean No. 600 Detergent; ProSoCo., Inc.
b) 202 Detergent; Diedrich Technologies
c) EaCo Chem, Inc.
b. For dark colored brick masonry not subject to metallic oxidation stains, use formulation consisting of a liquid blend of surface acting acids and special inhibitors.
1) Products:

a) Sure Klean No. 101 Lime Solvent; ProSoCo., Inc.
b) 200 Lime Solv; Diedrich Technologies
c) EaCo Chem, Inc.

c. For brick masonry subject to metallic oxidation stains, use formulation consisting of a liquid blend of organic acids and special inhibitors.
1) Products:
a) Sure Klean Vana Trol; ProSoCo., Inc.
b) 202 Vana-Stop; Diedrich Technologies
c) EaCo Chem, Inc.

d. For decorative concrete masonry units use a general purpose acidic cleaner to remove concrete splashes, excess mortar, mud, retarders, heavy efflorescence, embedded stains, rust, and surface soiling.
1) Products:
a) Sure Klean Custom Masonry Cleaner; ProSoCo., Inc.
b) 202 Vana-Stop; Diedrich Technologies
c) EaCo Chem, Inc.

e. For ground face (burnished) concrete masonry units, use a general purpose, nonetching acidic cleaner to remove rust, mud, oil, atmospheric dirt, mortar smears, and other stains without altering the surface texture.
1) Products:
a) Sure Klean Burnished Custom Masonry Cleaner; ProSoCo, Inc.
b) 202 Vana-Stop; Diedrich Technologies.
c) EaCo Chem, Inc.

E. Spray Equipment: Provide equipment for controlled spray application of water and chemical cleaners, if any, at rates indicated or recommended for pressure, measured at spray tip, and for volume. Adjust pressure and volume, as required, to ensure that damage to masonry does not result from cleaning methods.
1. For chemical cleaner spray application, provide a low pressure tank or chemical pump suitable for the chemical cleaner indicated, equipped with a cone-shaped spray tip.
2. For water spray application, provide a fan-shaped spray tip that disperses water at an angle of not less than 15 degrees.

2.11 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. When specifically approved by the A/E, admixtures shall meet ASTM C1384 Standard Specification for Admixtures for Masonry Mortars.
1. Do not use calcium chloride in mortar or grout.

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, Property 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 use Type M, where indicated only.
2. For masonry, use Type S, unless otherwise noted.

3. For exterior, above-grade, masonry veneer, use Type N, unless otherwise noted.

D. Use natural (noncolored) mortar for the following:
1. Face brick, unless otherwise noted.
2. Exterior (exposed) concrete masonry units, unless otherwise noted.
3. Concrete masonry units, unless otherwise noted.

E. Use integral water repellent admixture at all exterior concrete masonry unit wythe locations, unless noted otherwise.

F. Pointing mortar shall conform to ASTM C270, except that all sand shall pass a No. 16 sieve. Nonstaining and dirt resistant mortar shall be used to which ammonium stearate or calcium stearate is added to the amount equal to 3 percent of the weight of the cement used.
1. Pointing mortar shall be proportioned by volume with one part portland cement, 1/8 part Type S hydrated lime, and 2 parts graded (50 mesh or finer) sand to which ammonium stearate or calcium stearate is added in an amount equal to 2 percent of the weight of the cement used. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.
2. Add colored mortar pigment to produce mortar colors required. Coordinate with CMU manufacturer to produce color required to match CMU unit for repair of face.
3. Use pointing mortar to repair chipped CMU units.

G. Grout for Unit Masonry (by Strength): Comply with ASTM C 476. Grout mixes shall be designed by strength, unless specifically noted otherwise in the Contract Documents.
1. General: Do not use admixtures, including pigment, air-entraining agents, accelerators, retarders, water repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated. Do not lower the freezing point of grout by use of admixtures or anti-freeze agents.
a. Admixtures containing chlorides in excess of 0.2 percent chloride ions are not permitted to be used.
b. Antifreezes are prohibited for use in grouts.
c. Flyash: ASTM C618-89a, Type C or F may be substituted for up to 20 percent of the total cementitious materials in the gout mix.
2. Grout mixes shall be plant mix or factory blended (dry mix with water added at the site).
a. Field mixed grout designs are not acceptable.
3. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
4. Provide grout with a slump of 8 to 10 inches as measured according to ASTM C 143.

H. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.

2.12 SOURCE QUALITY CONTROL

A. Masonry Prism Tests (Empirical Design)
1. Prior to installation of concrete masonry work, construct a set of 3 concrete masonry prisms, using mortar and concrete masonry units to be used in the masonry work. Construction prisms for concrete masonry units as required on the Reinforced Masonry

Plan in the Drawings. Unless otherwise required, construct masonry prisms 8 inches by 8 inches by 16 inches high (nominal) in compliance with ASTM-E447, Method B.

2. During masonry work construct additional prisms as required. Refer to Division 01 Section "Quality Requirements".

B. Concrete Masonry Inspection
   1. Refer to Division 01 Section "Quality Requirements".
   2. Materials may require testing and retesting, as directed by the A/E, during the progress of the Work. All free access to material stockpiles, facilities and completed construction.
   3. See structural plans for special inspection requirements for masonry walls.

C. Masonry Contractor shall water test cavity to verify all water is draining to the exterior through the weeps before continuing with exterior wythe before capping wall. Contractor is encouraged to water test as flashing is installed to minimize possible failures.
   1. Contractor shall perform tests in the presence of CM, (if applicable) A/E, testing lab representative, and General Contractor.
   2. Contractor shall hold water hose and with standard water pressure force water into the cavity at a cell vent so water can be observed coming out adjacent weeps for a period of at least 5 minutes. Contractor shall continue down the wall to the next cell vent where a weep did not indicate water wicking out and continue this process until the entire length of flashing is tested.
   3. Where water is observed inside the building or outside the building away from the weeps, masonry units shall be removed and flashing reinspected and repaired.
   4. Water test shall be repeated where flashing was repaired.

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 work.
   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
   2. Verify that foundations are within tolerances specified.
   3. Verify that reinforcing dowels are properly placed.
   4. Verify critical steel elevations to ensure flashing will be installed at proper locations.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
   1. Note: In lieu of double wythe foundation walls, single wythe matching nominal overall width of double wythe may be provided.

B. Build chases and recesses to accommodate items specified in this and other Sections. Provide not less than 8 inches of masonry between chases or recesses and jamb of openings, and between adjacent chases and recesses.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. 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.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
   1. Mix units from several pallets or cubes as they are placed.

F. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

G. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
   1. 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.
   2. 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.
   3. 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.
   4. For exposed 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. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
   5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
   6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
   7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

H. Reinforcing Bars: Tolerances for placing reinforcing bars are:
   1. Variation from *d* for flexural elements (measured from center of reinforcement to the extreme compressive face of masonry):
      a. $d \leq 8$ inch — $\pm$ 1/2 inch
      b. 8 inch $< d \leq 24$ inch — $\pm$ 1 inch
      c. $d < 24$ inch — $\pm$ 1-1/4 inch
   2. For vertical bars in walls 2 inch from the location along the length of the wall indicated on the project drawings.

3. In addition, a minimum clear distance between reinforcing bars and the adjacent face of a masonry unit of 1/4 inch for fine grout or 1/2 inch for coarse grout must be maintained so that grout can flow around the bars.

3.3 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.
   1. Do not install cracked, broken, or chipped masonry units exceeding ASTM allowances.
   2. Clean units of surface dirt and contaminants before placing in contact with mortar.
   3. Lay-up walls plumb and true and with courses level, accurately spaced, within specified tolerances, and coordinated with other work. Do not wedge partitions tight against structural ceiling or beams, but provide a caulk or insulation filled joint between masonry and the structural roof deck, structural steel framing or structural floor deck at nonrated conditions. At rated walls, provide firestopping. Refer to Division 07 Section “Firestopping”.
      a. Cut masonry as required to maintain 2 inches clearance between masonry and all steel or reinforced concrete structural members that pass through or above walls, but are not to be supported by the walls.
   4. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors, unless otherwise indicated.

B. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4 inch horizontal face dimensions at corners or jambs.
   1. One-half running bond with vertical joint in each course centered on units in courses above and below, unless otherwise noted.
   2. Provide 1/4 running bond as required by Monarch size brick.
   3. Provide special bonding as indicated on Drawings.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 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.
   1. Align unit cells or cores that are to be grouted.

D. Stopping and Resuming Work: Stop work by racking 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.
   1. Install adjustable hollow metal frame anchors, locating anchors on jambs in horizontal bed courses near the top and bottom of each frame and at intermediate points not over 24 inches apart.
   2. Fill jambs of hollow metal door and window frames solid with grout.

3. Rake joints around exterior side of exterior hollow metal door frames for sealant under Division 7.
4. Protect inside (concealed) faces of door frames in exterior masonry walls, using fibered asphalt emulsion coating. Apply over shop primer approximately 1/8 inch thick and allow drying before handling.
5. Where hollow metal frames do not wrap around masonry jambs and heads, rub exposed corners of block to remove sharp, irregular edges.
6. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of grout stop mesh in the joint below and rod mortar or grout into core.
7. Fill cores in hollow concrete masonry units with grout 3 courses (24 inches) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
8. Take particular care to embed all conduits and pipes with concrete masonry without fracturing exposed shells and to fit units around switch, receptacle and other boxes set in walls. Where electric conduits, outlets, switch boxes, and similar items occur, grind and cut units before building in services.
9. Install anchors, reglets, and nailers for flashing and related work built into masonry work, where indicated.

3.4 MORTAR BEDDING AND JOINTING

A. Mortar Bedding; Brick and Concrete Masonry Units as follows:
1. Mix mortar ingredients for a minimum of 5 minutes in a mechanical batch mixer. Use water clear and free of deleterious materials that would impair the work. Each mortar batch is allowed only one retempering. Do not use mortar, which has begun to set after the first retempering, or if more than 2-1/2 hours has elapsed since initial mixing. Retempering will be permitted only within 1-1/2 hours of mixing, to replace moisture lost by evaporation. Discard any mortar or grout that is partially set.
2. Lay brick and other solid masonry units with completely filled bed and head joints. Do not deeply furrow bed joints. Butter ends with sufficient mortar to fill head joints and shove into place. Butter ends of brick in hand and in the wall at closures. Do not slush head joints.
3. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells; also bed webs in mortar in starting course on footings and foundation walls, in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
    a. Construct bed joint of the starting course of foundation with a thickness not less than 1/4 inch and not more than 3/4 inch.
4. Remove mortar protruding into cells or cavities that will be grouted. Do not permit mortar droppings to fall into cells, cavities of multi-wythe walls or to block weep holes. Maintain clear cavity width between facing and backing material and keep clear of mortar droppings by back beveling the mortar bed to prevent excess from extruding into cavity. Clean any excess that does occur by parging it to back of unit.
5. Fill holes not specified in exposed and below grade masonry with mortar.

B. Set limestone 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.

C. Joints: Maintain joint widths shown, except for minor variations required, to maintain bond alignment. Lay walls with 3/8 inch joints. Tool joints consistently with the same type round jointer when the mortar is thumb print hard. Tool joints in exposed masonry walls at uniform moisture content to avoid color variations. Cut joints flush for masonry walls that are to be concealed or to be covered by other materials. For exposed masonry, provide joints as follows:
   1. Exterior Joints
      a. Concave tooled, unless otherwise noted.
      b. Provide tooled joints horizontal and vertical at exterior scored concrete masonry units.
   2. Interior (Room Side) Joints
      a. Concave tooled, unless otherwise noted.
      b. Rake vertical joints at interior masonry partitions abutting vertical structural framing members for application of joint sealants.

3.5 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., unless otherwise noted.
   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.
      a. Reinforcement above is 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.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.6 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
   1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar and other rigid materials.
   2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
   3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

B. Building Expansion Joint Through Masonry
   1. Expansion joints indicated as 2 inches or less form an open joint for installation of expanding foam secondary sealant and sealant specified in Division 07 Section “Joint Sealants”. Maintain joint free and clear of mortar.

2. For expansion joints 2 inches and greater, refer to Division 05 Section “Expansion Joint Cover Assemblies”.

3.7 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. 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 ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
   2. The low-lift grouting procedure shall be used as described in the Drawings and in NCMA-TEK 3-2 Grouting for Concrete Masonry Walls and NEMA TEK Bulletins 3-3 and 14-2. Maximum height of grouting shall be 4 feet.
   3. Grout (slump 8 to 10 inches) shall be installed in the block cavities so as to completely fill each cavity with homogenous grout, extending from the lowest course to the top of the reinforced portion of the foundation or wall. Concrete or mortar shall not be used as grout for CMU.
   4. Between 5 and 20 minutes after the grout is placed, it shall be consolidated with a mechanical vibrator. The top of the grout filling shall be stopped 1-1/2 inches below the top of the concrete block to form a key, except for the top course in the wall where the grout shall be struck flush with the top.
   5. Aggregate used in the grout shall be small enough not to interfere with placement and plasticity.
   6. Caging devices and centering clips shall be spaced vertically such that 2 clips or devices, one near its top and one near its bottom restrain every section of vertical reinforcing bar.
   7. Where grouted cores do not extend the full height of a wall, install grout stop mesh at the lower limit of the grout.
   8. Where required on the plans, grouting operations shall be observed by an independent testing agency.

3.8 FIELD QUALITY CONTROL

A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections. Minimum qualifications for the masonry inspector shall be 5 years of reinforced masonry inspection experience or acceptance by a State, municipality, or other governmental body having a program of examining and certifying inspectors for reinforced masonry construction. The masonry inspector shall be present during preparation of masonry prisms, sampling and placing of masonry units, placement of reinforcement, inspection of grout space,

immediately prior to closing of cleanouts, and during grouting operations. The masonry inspector shall assure Contractor compliance with drawings and specifications, including flashing. The masonry inspector shall keep a complete record of all inspections and shall submit Masonry Inspection Reports and Special Inspection requirements set forth in the structural drawings for inspection requirements and a photographic record of flashing.

1. Masonry Inspection: Provide masonry construction inspection of concrete or brick masonry walls indicated as requiring inspection on the Masonry Plans to insure that masonry construction is in conformance with the Contract Documents. Masonry inspection is required for those masonry elements that must be constructed to attain high design strengths.
    a. Inspection shall use NCMA-TEK 18-3 Quality Assurance as a guideline.
    b. The individual or individuals who will perform the masonry inspection shall be present for the Premasonry Conference.
    c. The masonry inspector shall prepare a written report or reports for each day of inspection. Masonry Inspection Report, following this Section, shall be used for all inspection reports. Inspecting reports shall be submitted to the Architect within 5 days of masonry inspection.
    d. The masonry inspector shall be present and observe all masonry construction operations in walls requiring inspection. The masonry inspector shall be present at the project site within sufficient time, in advance of grouting operations, to inspect the construction to insure its conformance to the Contract Documents and that grouting may proceed. No grouting shall be permitted unless the masonry inspector is present and has indicated that the masonry construction is properly prepared for the grouting operation.

B. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
    1. Payment for these services will be made by Owner.
    2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

C. Concrete Masonry Unit Test: For each type of unit provided, per ASTM C 140.
    1. Tests of Concrete Masonry Prisms: The Masonry Contractor shall coordinate with a qualified testing laboratory to perform field quality control testing during the masonry work.
        a. When required by the Masonry Plan, construct a set of 3 masonry prisms using mortar and concrete masonry units to be used in the masonry work. Unless otherwise noted, construct prisms 8 inches by 8 inches by 16 inches high (nominal) in compliance with ASTM E447, Method B.
        b. When prism tests are required to establish the strength of masonry in lieu of Masonry Inspection, provide a minimum of one set of 3 masonry prisms for testing for each 5000 sq.ft. (gross) of masonry wall construction.
        c. Submit written reports for each prism tested. Provide the project identification name and number, date of report, name of Contractor, name of testing service, name of material suppliers, specific location where masonry represented by the prism is used, compression test strength results, and specified required strength.
        d. If the compressive strength tests fail to meet the minimum strength specified in the Plans, the masonry represented by the tests shall be considered deficient.

e. When tests indicating deficient masonry represent masonry already constructed, such masonry shall be removed and replaced by the Contractor without additional cost to the Owner. In lieu of removal and replacement, additional cores may be grouted as required and directed by the Architect without additional cost to the Owner.

D. Mortar Test (Property Specification): For each mix provided, per ASTM C 780. Test mortar for mortar air content and compressive strength.
1. Tests for Mortar: The Masonry Contractor shall coordinate with a qualified testing laboratory to perform field quality control testing during the masonry mortar work.
   a. For colored and noncolored mortars test for compressive strength by the methods of sampling and testing of ASTM C109 and ASTM C780.
      1) Provide a minimum of one set of cubes for testing per 5,000 sq.ft. of masonry wall construction or for each ready mix truckload of grout and as directed by Architect.
   b. Submit written reports for each material sampled and tested. Provide the project identification name and number, date of report, name of contractor, name of testing service, source of aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.
   c. If the compressive strength tests fail to meet the minimum requirements specified; the mortar represented by such tests would be considered deficient in strength.
   d. Deficient mortar shall be removed and replaced by the Contractor without additional cost to the Owner.

E. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.
1. Place a piece of preservative-treated wood 1-5/8 inch thick and 3 inch square on a level surface. For masonry units with permeable paper, such as absorptive paper toweling, taped to one face shell are placed around the wood block to form the mold. The resulting mold is approximately 3 inches square by 6 inches high. Measure and record the slump of the grout in accordance with Test Method C143. Pour grout into the mold in two layers. Rod each layer 15 times with a tamping rod to eliminate air bubbles. Rod the bottom layer throughout its depth. Distribute the strokes uniformly over the cross-section of the mold. For the upper layer, allow the stick to penetrate about 1/2 inch into the underlying layer. After the second lift is puddled, level the top of the specimen with a straightedge and immediately cover the specimens with wet burlap or similar material to keep it damp. Protect the specimens against disturbance and extreme changes in temperature, and after 48 hours, remove the masonry units and carefully pack the specimens for transport to the laboratory where they will be stored in a moist room until tested.
2. Cap the specimens in accordance with the applicable provisions of "Method of Capping Cylindrical Concrete Specimens," ASTM C617. The specimens should be tested in a damp condition in accordance with the applicable provisions of ASTM C39 "Methods of Test for Compressive Strength of Molded Concrete Cylinders."
3. Three test specimens shall be made and tested for each type of grout to be used in the work.
4. Tests for Grout: The Masonry Contractor shall coordinate with a qualified testing laboratory to perform field quality control testing during the masonry grout work.

a. Grout for filling reinforced or unreinforced concrete masonry cores or brick cavities test for compressive strength.
   1) Provide a minimum of one set of 3 test specimens for testing per 5,000 sq.ft. of masonry wall construction or for each ready mix truckload of grout and as directed by the Architect.
b. Submit written reports for each material sampled and tested. Provide the project identification name and number, date of report, name of Contractor, name of testing service, source of aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, specific location where material represented by sample is used, slump and compression test results. Indicate whether or not material is acceptable for intended use.

F. Prism Test: For each type of construction provided, per ASTM C 1314 at 7 days and at 28 days.

3.9 REPAIRING, POINTING, AND CLEANING

A. During the cutting-in of new openings and installation of the new works, remove and replace existing face brick and 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. Dry brush exposed masonry with bristle brushes at end of each work day.

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 or use methods used on approved mock-up. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
   a. Where walls are a combination of CMU and brick only the less aggressive CMU cleaners should be used.
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 brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
   a. Remove efflorescence in accordance with brick manufacturer's recommendations. Cleaning agents may be used only with approval of masonry unit manufacturer. Cleaning agents must be same as those used on test area.

b. If chemical cleaners are to be sprayed on, the pressure shall not exceed 50 psi.

6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A and 8-3A, applicable to type of stain on exposed surfaces.
   a. If additional cleaning is necessary for special or prefaced CMU, consult with masonry unit manufacturer for approved method. Test method and gain A/E approval before proceeding.
   b. Water application method shall never exceed 400 psi without approval of A/E.
8. Clean Concrete Stone Masonry (cast stone) and Architectural Stone Veneer (stacked stone) units to comply with recommendations in ILI's "Indiana Limestone Handbook."

END OF SECTION 042000

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Elastomeric and rigid joint sealants, caulking compounds, and related accessories.
2. Silicone joint sealants.
3. Urethane joint sealants.
4. Latex joint sealants.
5. Acoustical joint sealants.
6. Joint sealant backing.

B. Provide joint sealants as a minimum in the following locations. Project specific materials and building systems may require additional joint sealants to be provided beyond the locations listed below.

1. Exterior joints in concrete surfaces:

a. Joint Sealants in exterior concrete is specified in Division

2. Interior joints in vertical surfaces and horizontal nontraffic surfaces:

a. Exposed interior surfaces of exterior walls.
b. Perimeter joints of exterior openings.
c. Between tops of masonry walls and underside of concrete slabs and beams.
d. Tile control and expansion joints.
e. Vertical control joints on exposed surfaces of unit masonry and concrete walls.
f. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
g. Perimeter joints of toilet fixtures.
h. Interior joints between dissimilar materials where the joining of the 2 surfaces leaves a gap between the meeting materials or components as may be dictated by the various methods of construction to form a barrier against the passage of liquids, solids, or gases.

3. Interior control and expansion joints in horizontal traffic surfaces:

a. Cast-in-place concrete.
b. Tile flooring.
c. Interior joints between dissimilar materials where the joining of the 2 surfaces leaves a gap between the meeting materials or components as may be dictated by the various methods of construction to form a barrier against the passage of liquids, solids, or gases:

1.2 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:
   1. Joint-sealant application, joint location, and designation.
   2. Joint-sealant manufacturer and product name.
   3. Joint-sealant formulation.
   4. Joint-sealant color.

D. Product test reports.

E. Warranties.

1.3 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

B. Preinstallation Conference: Conduct conference at Project site.
   1.
   2. Apply sample for review by Architect.

1.4 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Five (5) years from date of Substantial Completion.

B. All joint sealants shall be guaranteed to be weather-tight, including no leaks, within specific warranty period.
   1. Warranty Period: Five (5) years from date of Substantial Completion.

1.5 DEFINITIONS

A. Caulking: To install or apply a sealant across or into a joint, crack, or crevice.

B. Sealant: A material that has adhesive or cohesive properties to form a barrier against the passage of liquids, solids, or gases.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
   1. Architectural Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
   1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. General Sealer Performance Requirements: Provide colors indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors. Select materials for compatibility with joint surfaces and other indicated exposures, and except as otherwise indicated select modules of elasticity and hardness or grade recommended by manufacturer for each application indicated. Where exposed to foot traffic, select materials of sufficient strength and hardness to withstand stiletto heel traffic without damage or deterioration of sealer system.

2.2 SILICONE JOINT SEALANTS

A. Silicone, Nonsag, Not Immersible:
   1.
   2. Silicone base, single-component, chemical curing; ASTM C 920, Type S, Grade NS, Class 25; Federal Specification TT-S-001543, nonsag type, Class A;
   3. Capable of withstanding movement up to 50 percent of joint width.
   4. Manufacturer: Dow Corning Corp. No. 790; General Electric Silpruf; Sonneborn Sonolastic Omniseal; or equal.

2.3 URETHANE JOINT SEALANTS

A. Two-component Polyurethane, Nonsag, Not Immersible:
   1.

2. Polyurethane base, multi-component, chemical curing; ASTM C 920, Type M, Grade NS, Class 25 and Federal Specification TT-S-00227, nonsag Type II, Class A.
3. Manufacturer: Sonneborn Sonolastic NP-II; Pecora Corp. Dynatrol II; Tremco Dymeric; H.S. Peterson Co. Isoflex 2000; Mameco International Vulkem 227; or equal.

2.4 LATEX JOINT SEALANTS

A. Latex Joint Sealant Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. BASF Building Systems.
b. Bostik, Inc.
c. Pecora Corporation.
d. Tremco Incorporated.

2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a.
b. USG Corporation.
c. Pecora Corporation
d. Tremco Incorporated

2.6 JOINT SEALANT BACKING

A. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin or Type B (bicellular material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Inspect all joints and surfaces that are scheduled to receive sealant.
   1. Verify that the continuous wood blocking shown on the drawings between open-backed material; such as windows, curtainwalls, storefront framing, and adjacent surfaces is in place. If the continuous blocking is not in place, do not proceed with the application of the sealant until the omission is corrected.
   2. Notify the General Contractor if any of the joints is not acceptable for the application of the sealant.

B. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
   1. Remove laitance and form-release agents from concrete.
   2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

C. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

D. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
   4. Sealant shall complete fill the width of the joint and shall not extend onto the face of the frames for the doors, windows, curtainwalls, storefronts, and similar materials, and shall not extend onto the adjacent building surface, past the projected front surface of the material receiving the sealant. Provide a mock-up joint for the Architect's review and approval.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

F. Latex Joint Sealant: Color to be selected from manufacturers standard range of colors.
   1.
   2. Openings ¼" and less between walls and partitions and adjacent casework, shelving, built-in or surface mounted equipment, plumbing and lighting fixtures.
   3. Perimeters of frames of doors, windows, access panels and the like which adjoin interior surfaces, except where sealing compound is specified.
   4. Joints of interior walls and partitions which adjoin columns, pilasters, concrete walls or exterior walls.
   5. Exposed joints at top of full height walls and partitions where isolation seals occur.
   6. Where caulking is shown on drawings.
   7. Other interior locations where small voids between materials require filling for first-class workmanship and painting.

G. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.

H. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.3 JOINT-SEALANT SCHEDULE

A. Two-Component Polyurethane Sealant: Color to be selected from manufacturers standard range of colors.
   1.

2. At both exterior and interior joints, and recesses formed where frames and subsills of windows, doors, louvers, vents and the like adjoin other materials.
3. Joints or recesses on exterior of building (including locations not specifically shown or specified) where sealing is required to prevent infiltration of water, moisture, and wind into building construction.
4. Masonry joints in which shelf angles occur.
5. Interior face of expansion and control joints in exterior walls where no expansion joint covers are required.
6. Expansion and control joints of interior walls and partitions where no expansion joint covers are required.
7. Openings where pipes, conduits and similar items pass through exterior walls.
8. Metal reglets where lead caulking rope is not used, top edge of surface mounted reglets, and where flashing is inserted into masonry joints.
9. Metal-to-metal joints where sealing or caulking is shown or specified.
10. Where sealant is shown on drawings or specified elsewhere.
11. At penetrations through flashings.

B. Latex Joint Sealant: Color to be selected from manufacturers standard range of colors.
1. Openings ¼" and less between walls and partitions and adjacent casework, shelving, built-in or surface mounted equipment, plumbing and lighting fixtures.
2. Perimeters of frames of doors, windows, access panels and the like which adjoin interior surfaces, except where sealing compound is specified.
3. Joints of interior walls and partitions which adjoin columns, pilasters, concrete walls or exterior walls.
4. Exposed joints at top of full height walls and partitions where isolation seals occur.
5. Where caulking is shown on drawings.
6. Other interior locations where small voids between materials require filling for first-class workmanship and painting.

C. Acoustical joint Sealants:
1. At all interior locations noted on the drawings:

D. Silicone Joint Sealants: Color to be selected from manufacturers standard range of colors.
a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.
c. Other joints as indicated.

END OF SECTION 079200

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Porcelain Tile & Trim
2. Quarry tile and trim.
3. Setting materials.
4. Grout.
5. Sealants.
6. Metal edge strips.

1.2 SUBMITTALS

A. Furnish certificate for each type of tile, signed by both the tile manufacturer and installation contractor, stating grade and type of tile.

B. Submit six (6) copies of manufacturer's technical information and installation instructions for all materials required, except bulk materials; submit two (2) copies of maintenance guidelines as recommended by the manufacturer for each type of tile, for Owner's use.

C. Submit three (3) sample panels of each type and color of tile required, not less than 12" square, on plywood or hardwood backing, and grouted for representative finished installation. Submit samples of tile accessories, trim shapes, and other units if requested by Architect.

D. When using setting and grouting material manufactured under Tile Council of America (TCA) license, provide identification and formula number on each container.

1.3 QUALITY ASSURANCE

A. All tile materials shall equal or exceed Standard Grade requirements conforming to Tile Council of America (TCA) 137.1 - latest edition.

B. Provide materials obtained from only one source for each type of tile and color to minimize variations in appearance and quality.

C. All tile materials and installation methods shall conform to the applicable provisions of American National Standards Institute (ANSI) and Tile Council of America (TCA) as referenced herein.

D. Pre-Installation Meeting: This Contractor shall be required to attend a pre-installation meeting with the Architect and others affected by this work, and shall coordinate with the Architect immediately prior to commencement of actual installation work.

E. Tile Council of North America (TCA) "Handbook for Ceramic Tile Installation" shall be used as a guide to assist in standardizing installation specifications.

F. ANSI Ceramic Tile Standard: Provide tile that complies with A137.1, "Specification for Ceramic Tile".

G. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI Standards referenced in "Setting and Grouting Materials" Article.

1.4 EXTRA MATERIALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 TILE PRODUCTS **(CT-1)**

A. ANSI Porcelain Tile Standard: Provide Standard grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. Tile Type: Porcelain wall tile. (all locations shown on drawings noted "tile")

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. BASIS OF DESIGN Product By: American Olean;
b. Crossville, Inc.
c. Daltile; Division of Dal-Tile International Inc.

2. Composition: Porcelain
3. Module Size: 12”x24” inches
4. Thickness: 5/16 inch (6.35 mm).
5. Face: Plain with cushion edges.
6. Surface: Smooth, without abrasive admixture.
7. Finish: Matte.
8. Tile Color and Pattern:

    a. Style - Crafter.
    b. Color - Ink
    c. Grout color shall be as selected by Architect.

9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer’s standard shapes.

    a. Bullnose straight trim as base trim, module 3x24 inch. Provide single row. Top of base shall have a square edge at areas with wall tile and have a bullnose edge at areas without wall tile.
    b. External Corners: Surface bullnose, module size 3x24” inches.

2.2 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated.

B. Chlorinated-Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch (0.76-mm) nominal thickness.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. Noble Company (The); Nobleseal CIS.
    b. Dal Seal CIS
    c. Bostic Ultraset

2.3 SETTING MATERIALS

A. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Boiardi Products; a QEP company.
    b. Bonsal American; an Oldcastle company.
    c. Bostik, Inc.
    d. C-Cure.
    e. Laticrete International, Inc.
    f. MAPEI Corporation.
    g. Summitville Tiles, Inc.

2. For wall applications, provide nonsagging mortar.

B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Manufacturers: Subject to compliance with requirements available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Boiardi Products; a QEP company.
    b. Bonsal American; an Oldcastle company.
    c. Bostik, Inc.
    d. C-Cure.
    e. Laticrete International, Inc.
    f. MAPEI Corporation.
    g. Summitville Tiles, Inc.

2. Prepackaged, dry-mortar mix combined with liquid-latex additive.

3. For wall applications, provide nonsagging mortar.

C. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3[, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Bonsal American; an Oldcastle company.
    b. Bostik, Inc.
    c. C-Cure.
    d. Laticrete International, Inc.
    e. MAPEI Corporation.
    f. Summitville Tiles, Inc.

2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bonsal American; an Oldcastle company.
   b. Bostik, Inc.
   c. C-Cure.
   d. DAP Inc.
   e. Laticrete International, Inc.
   f. MAPEI Corporation.
   g. Summitville Tiles, Inc.

3. For quarry tile insulation.

2.4 GROUT MATERIALS

A. Standard Sanded Cement Grout: ANSI A 108.6.

B. Standard Unsanded Cement Grout: ANSI A 118.6.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Boiardi Products; a QEP company.
   b. Bonsal American; an Oldcastle company.
   c. Bostik, Inc.
   d. C-Cure.
   e. Laticrete International, Inc.
   f. MAPEI Corporation.
   g. Summitville Tiles, Inc.

C. Chemical-Resistant Water-Cleanable Epoxy Grout: ANSI A118.3.

1. Manufacturers: Subject to compliance with requirements available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bonsal American; an Oldcastle company.
   b. Bostik, Inc.
   c. C-Cure.
   d. Laticrete International, Inc.
   e. MAPEI Corporation.
   f. Mer-Kote Products, Inc.
   g. Summitville Tiles, Inc.

2. For quarry tile insulation.

2.5 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."

1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work include, but are not limited to, the following:

a. DAP Inc.; Titanium Enriched Kitchen and Bath Sealant 100 percent Silicone Kitchen and Bath Sealant.
b. Dow Corning Corporation; Dow Corning 786.
c. GE Silicones, a division of GE Specialty Materials; Sanitary 1700.
d. Laticrete International, Inc.; Latasil Tile & Stone Sealant.
e. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
f. Tremco Incorporated; Tremsil 600 White.

2.6 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape stainless steel, ASTM A 666, 300 Series exposed-edge material.

C. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Bonsal American, an Oldcastle company; Grout Sealer.

b. Bostik, Inc.; CeramaSeal Grout & Tile Sealer, Magic Seal, Silox 8, Siloxane 220.
c. C-Cure; Penetrating Sealer 978.
d. Custom Building Products; Surfaceguard, Grout and Tile, Grout Sealer.
e. Jamo Inc.; Matte Finish, Penetrating Sealer.
f. MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.
g. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
h. Summitville Tiles, Inc.; SL-15, Invisible Seal Penetrating Grout and Tile Sealer.
i. TEC, a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Prior to the installation of tile over Masonry Walls:

1. Fill voids.
2. Gind-of high areas.
3. Apply scatch coat of setting bed, if required, to obtain a smooth and uniform surface.

C. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with

continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. Follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Porcelain Wall Tile: 1/8 inch.

F. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

H. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

I. Grout Sealer: Apply grout sealer to grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

J. Install crack isolation membrane at shower and at all areas with Quarry Tile Floor, except the cooler and freezer, to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

END OF SECTION 093000

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes acoustical tiles and concealed suspension systems for ceilings.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Coordination Drawings: Drawn to scale and coordinating acoustical tile ceiling installation with hanger attachment to building structure and ceiling mounted items. Show size and location of initial access modules.

C. Samples: For each exposed finish.

D. Maintenance data.

1.3 QUALITY ASSURANCE

A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory.

B. Fire-Test-Response Characteristics:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical tile ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

    a. Identify materials with appropriate markings of applicable testing and inspecting agency.

2. Surface-Burning Characteristics: Acoustical tiles complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.

    a. Smoke-Developed Index: 450 or less.

C. Seismic Standard: Comply with the following:

1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.

2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
3. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
4. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."

1.4 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size tiles equal to 2.0 percent of quantity installed.
2. Suspension System Components: Quantity of each concealed grid and exposed component equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL TILE CEILINGS, GENERAL

A. Acoustical Tile Standard: Comply with ASTM E 1264.

B. Metal Suspension System Standard: Comply with ASTM C 635.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Expansion anchors fabricated from corrosion-resistant materials, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

1. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.

E. Seismic struts and seismic clips.

F. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

2.2 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING **(ACT-2)**

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Armstrong World Industries, Inc.
2. BPB USA.
3. USG Interiors, Inc.

B. Ceiling Schedule:

1. Type 2 – 24” x 48” x 5/8” square lay in with 15/16” Environmental suspension system: white
   a. Armstrong – Ceramaguard Un-perforated – #605
   b. BPB – Enviroguard #1190-CRF-1
   c. USG – Cleanroom Climaplus - #56091

C. Color: as noted above.

2.3 METAL SUSPENSION SYSTEM FOR ACOUSTICAL TILE CEILING

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

B. Products: Subject to compliance with requirements, provide one of the following:

1. Armstrong World Industries, Inc.

2. BPB USA.
3. USG Interiors, Inc.

C. Direct-Hung, Fire-Rated Suspension System: Heavy-duty structural classification. Provide environmental grid system where noted above.

D. Access: Upward, with each access unit identified by manufacturer's standard unobtrusive markers.

E. Provide hold down clips in all restroom and vestibule locations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders.

C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers, use trapezes or equivalent devices. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

1. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
2. Do not attach hangers to steel deck tabs or to steel roof deck.

D. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical tiles. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.

E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.

END OF SECTION 095123

SECTION 102113 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solid-polymer toilet compartments configured as toilet enclosures and urinal screens.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for each exposed product and for each color and texture specified.

D. Maintenance data.

1.3 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

   1. Flame-Spread Index: 75 or less.
   2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

PART 2 - PRODUCTS

2.1 SOLID-POLYMER UNITS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   1. BASIS OF DESIGN – Scranton Products – Hiny Hiders.

2. Accurate Partitions Corporation.
3. Bradley Corporation; Mills Partitions.

B. Toilet-Enclosure Style: Overhead braced, Floor anchored.

C. Urinal-Screen Style: Wall hung, with full height bracket secured to wall.

D. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) or polypropylene (PP) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.

1. Continuous Hinges: Configure doors and pilasters to receive continuous hinges.
2. Heat-Sink Strip: Manufacturer's standard continuous, stainless-steel strip fastened to exposed bottom edges of solid-polymer components to prevent burning.
3. Polymer Panel Finish: Two colors and patterns in each room.

a. Color and Pattern: Grey – Orange Peel

E. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.

F. Brackets (Fittings):
1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.2 ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

1. Material: Stainless steel.
2. Hinges: Manufacturer's standard continuous, cam type that swings to a closed or partially open position.
3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-

type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.3 FABRICATION

A. Overhead-Braced, Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism. Provide manufacturer’s standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

B. Floor Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at bottoms of pilasters. Provide shoes and sleeves (caps) at pilasters to conceal anchorage.

C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

B. Clearances: Maximum 1/2 inch (13 mm) between pilasters and panels; 1 inch (25 mm) between panels and walls.

3.2 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Toilet Room Accessories

B. Owner-Furnished Material:
   1. Owner will provide and Contractor will install the items indicated on the Drawings.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Schedule:
   1. Identify locations using room designations indicated on Drawings.
   2. Identify products using designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 TOILET ROOM ACCESSORIES

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:
   1. A & J Washroom Accessories, Inc.
   2. American Specialties, Inc.
   3. Bobrick Washroom Equipment, Inc.
   4. Bradley Corporation.
   5. General Accessory Manufacturing Co. (GAMCO).

B. Grab Bar:
   1.
   2. Mounting: Flanges with concealed fasteners.
   3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
      a. Finish: Smooth, No. 4, satin finish and Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area at wet areas.
   4. Outside Diameter: 1-1/4 inches (32 mm).
   5. Configuration and Length: As indicated on Drawings.

C. Mirror Unit:

1. Stainless Steel Framed Mirror: Mirror shall have a one piece, Type 304 stainless steel angle frame, ¾ inch by ¾ inch with continuous integral stiffener on all sides and beveled front to hold frame tightly against mirror; corners shall be heliarc welded, ground and polished smooth; all exposed surfaces shall have satin finish with vertical grain. Float/plate glass mirror shall be guaranteed for 15 years against silver spoilage. All edges shall be protected by plastic filler strips and the back shall be protected by full size, shock absorbing, water resistant, nonabrasive, 1/8 inch thick polyethylene padding. Galvanized steel back shall have integral hanging brackets for mounting on concealed rectangular wall hanger(s). Mirror shall be secured to hanger(s) with concealed Phillips head locking screws located in bottom of frame.
2. Size: As indicated on Drawings.

D. Soap Dispenser (Salvaged)
1. Provided by Owner, installed by Contractor.

E. Toilet Paper Dispenser (Salvaged)
1. Provided by Owner, installed by Contractor.

F. Paper Towel Dispenser
1. Provided by Owner, Installed by Contractor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

END OF SECTION 102800

DIVISION 22 PLUMBING

22 0000 General Requirements for Plumbing Systems

22 0001 Basic Plumbing Requirements
22 0002 Plumbing Work in Existing Buildings
22 0005 Excavation, Backfill and Surface Restoration

22 0500 Common Work Results for Plumbing

22 0519 Meters and Gauges
22 0520 Common Piping Materials and Methods
22 0523 General Duty Valves
22 0525 Flexible Pipe Connectors
22 0529 Pipe Hangers and Supports
22 0553 Identification for Plumbing Systems

22 0700 Plumbing Insulation

22 0719 Pipe Insulation

22 1000 Plumbing Piping and Pumps

22 1116 Domestic Water Piping
22 1119 Domestic Water Piping Specialties
22 1613 Natural Gas House Piping

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SECTION 22 0001 – BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section Includes the following:

1. General Requirements
2. Definitions
3. Scope of Work
4. Drawings and Specifications
5. Reference Standards
6. Allowances, Unit Prices and Alternates
7. Site Visit
8. Permits, Regulations and Inspections
9. Project Management and Coordination
10. Temporary Utilities
11. Workmanship
12. Protection
13. Painting
14. Cleaning
15. Miscellaneous Equipment Connections
16. Equipment Selection
17. Shop Drawings
18. Final Inspection and Punch List
19. Operation and Maintenance Manuals
20. Record Drawings
21. Warranties
22. Project Closeout
23. Operation and Adjustment of Equipment
24. Operating Demonstration and Instruction

1.2 GENERAL REQUIREMENTS

A. All provisions of Division 00 Front End Documents and Division 01 General Requirements apply to work specified in this Division.

B. Specification provisions of other relevant Divisions shall apply where applicable work is required to be performed under this Plumbing work.

C. A complete and functional Plumbing system installation shall be provided under this Division. Should overlap of work among trades become evident, this shall be called to the attention of the architect. In such event, none of the trades or their suppliers shall assume that he relieved of the work which is specified under his branch until instructions in writing are received from the Architect.

D. The Mechanical and Electrical drawings and specifications assign work (labor and/or materials to be provided by the General, Plumbing, Fire Suppression, HVAC or Electrical Contractor or their sub-contractors. Understanding that the contractors for mechanical and electrical work are sub-contractors to the (General) Contractor, such assignments are not intended to restrict the Contractor in assignment of work among the sub-contractor to accommodate trade agreements and practices or the normal conduct of the construction work.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.4 SCOPE OF WORK

A. The scope of the Plumbing work includes furnishing, installing, testing and warranty of all Plumbing work shown on the Plumbing drawings and specified herein, including Division 00, Division 01, Division 22 and applicable provisions of other relevant Divisions..

1.5 DRAWINGS AND SPECIFICATIONS

A. The drawings indicate the general arrangement of the work and are to be followed insofar as possible. The word “provide,” as used, shall mean “furnish and install.” If significant deviations from the layout are necessitated by field conditions, detailed layouts of the proposed departures shall be submitted to the Architect for approval before proceeding with the work.

B. Make all necessary field measurements to insure correct fitting. Coordinate work with all other trades in such a manner as to cause a minimum of conflict or delay.

C. The drawings and specifications shall be carefully studied during the course of bidding and construction. Any errors, omissions or discrepancies encountered shall be referred immediately to the Architect for interpretation or correction, so that misunderstandings at a later date may be avoided. The contract drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Having pipe and fittings fabricated and

delivered in advance of making actual measurements shall bet be sufficiently in advance as to not cause extra work, or unduly delay the work. Coordinate work in advance with all other trades and report immediately any difficulties which can be anticipated.

D. The Architect shall reserve the right to make minor adjustment in locations of system runs and components where he considers such adjustments desirable in the interest of concealing work or presenting a better appearance where exposed. Any such changes shall be anticipated and requested sufficiently in advance as to not cause extra work, or unduly delay the work. Coordinate work in advance with all other trades and report immediately any difficulties.

E. Equipment or piping shall not be installed or run above electrical switchgear or panelboards, nor in or above the access space in the immediate vicinity of the electrical switchgear/panelboards, in accordance with NEC Article 384.

F. Where any system runs and components are so placed as to cause or contribute to a conflict, it shall be readjusted at the expense of the contractor causing such conflict. The Architect's decision shall be final in regard to the arrangement of ductwork, piping, etc., where conflict arises.

G. Provides offsets in system runs, additional fittings, necessary drains and minor valves, traps, and devices required to complete the installation, or for the proper operation of the system. Each Contractor shall exercise due and particular caution to determine that all parts of the work are made quickly and easily accessible.

H. Should overlap of work among the trades become evident, this shall be called to the attention of the Architect. In such event, none of the trades or their suppliers shall assume that he is relieved of the work which is specified under his branch until instructions in writing are received from the Architect.

1.6 REFERENCE STANDARDS

A. Where standards (NFPA, NEC, ADTM, UL, ASPE, etc.) are referenced in the specifications or on the drawings, the latest edition is to be used except, however, where the authority having jurisdiction has not yet adopted the latest edition, the edition so recognized shall be used.

1.7 ALLOWANCES, UNIT PRICES AND ALTERNATES

A. Refer to Sections 01200 Allowances, 012200 Unit Prices and 012300 Alternates.

1.8 SITE VISIT

A. Refer to Section 017300 Execution.

B. Each bidder shall visit the project site to understand the existing conditions and compare the conditions with information shown on the drawings. Report immediately to the Architect any issues or discrepancies which are discovered that affect the bid. Changes to contract price will not be considered for site condition issues that are readily apparent from a thorough site review.

1.9 PERMITS, REGULATIONS AND INSPECTION

A. Work must conform to applicable local, state and federal laws, ordinances and regulations. Where drawings or specifications exceed code requirements, the drawing and specifications shall govern. Install no work contrary to minimum legal standards.

B. Except where the permit application is made by the Architect or the Engineer, the Plumbing contractor shall be responsible to file for and obtain all required permits from the governing inspection agencies for the plumbing work. Where the Architect or Engineer is the Architect or Engineer of record, they will furnish sealed and signed drawings and specifications required by the permit authorities.

C. Include payment of all permit and inspection fees applicable to the work in this Division.

D. All work shall be subject to inspection and approval of Federal, State and local agencies as may be appropriate as well as the Architect and Engineer.

E. Furnish for the Owner certificates of approval from the governing inspection agencies as a condition for final payment.

1.10 PROJECT MANAGEMENT AND COORDINATION

A. Refer to Section 013100 Project Management and Coordination.

1.11 TEMPORARY UTILITIES

A. Refer to Section 015000 – Temporary Facilities and Controls for division of responsibilities for temporary utilities.

1.12 WORKMANSHIP

A. Refer to Section 014000 Quality Requirements.

B. Materials and equipment shall be installed and supported in a first-class and workmanlike manner by mechanics skilled in their particular trades. Workmanship shall be first-class in all respects, and the Architect shall have the right to stop the work if highest quality workmanship is not maintained.

C. Plumbing work shall be performed by licensed Plumbing Contractors in accordance with requirements of the jurisdiction.

1.13 PROTECTION

A. Each Contractor shall be entirely responsible for all material and equipment furnished in connection with his work. Special care shall be taken to properly protect all parts thereof from theft, damage or deterioration during the entire construction period in such a manner as may be necessary, or as directed by the Architect.

B. The Owner's property and the property of other contractors shall be scrupulously respected at all times. Provide plastic sheeting, drop cloths or similar barriers where dust and debris is generated, to protect adjacent areas.

C. Contractor shall protect all equipment and materials from detrimental effects of weather or construction activity. All items shall be stored and secured in a protected location away from the daily work area. Equipment or materials shall be placed on raised skids to protect from surface moisture. Where appropriate, provide plastic sheeting or similar vapor barrier underneath the stored products to reduce the effects of ground moisture or curing concrete on the local humidity levels. Where unfinished ferrous products or finished ferrous products with raw edges are stored, provide local, dry heat to maintain ambient relative humidity levels below 65% RH to prevent rust.

D. All equipment shall retain the original packaging until required to be removed for installation or operation. Open ends of piping, conduit, etc. shall be capped or sealed and ventilation openings into equipment shall be wrapped and sealed in plastic sheeting to prevent dust or dirt entry both when stored and after installation but still open to the effects of construction activity. Stored items as well as installed equipment shall be covered with plastic sheeting at all times until placed in service or until dust generating activity in the area has ceased.

1.14 PAINTING

A. In addition to any painting specified for various individual items of equipment, the following painting shall be included in Division 22:

1. Ferrous metal which is no factory or shop painted or galvanized and which remains exposed to view in the finished areas of the building / building including finished areas, mechanical rooms, storage rooms, and other unfinished areas shall be given a prime coat of paint.

2. Ferrous metal installed outside the building which is not factory or shop painted or galvanized shall be given a prime coat of paint.

3. Equipment and materials which have been factory or shop coated (prime or finished painted or galvanized), on which the finish has been damaged or has deteriorated, shall be cleaned and refinished equal to its original condition. The entire surface shall be repainted if a uniform appearance cannot be accomplished by touch-up.

B. Paint, surface preparation and application shall conform to applicable portions of the Painting section of Division 9 of the Specifications. All rust must be removed before application of paint.

C. Finish painting is included in the General Contract except where otherwise required under remodeling work. Refer to the Cutting and Patching paragraph in this Section for finishing requirements

1.15 RECORD DRAWINGS

A. Refer to Section 017839 Project Record drawings.

B. Each Contractor shall maintain a separate set of prints of the contract documents and shall show all changes or variations, in a manner to be clearly discernible, which are made during construction. Upon completion of the work, these drawing shall be turned over to the Architect.

1.16 CLEANING

A. Debris, dust, dirt, etc shall be removed daily, particular attention shall be paid to areas that the Owner is continuing to occupy or use; any mess created in corridors, stairwells and egress paths that are maintained during construction shall be cleaned immediately.

B. The Owners dumpsters and trash receptacles shall not be used. If a dumpster is required, it shall be provided by the contractor and located where approved by the Owner. Coordinate dumpster requirements with other contractors.

C. Before turning an area back over to the Owner, thoroughly clean the space to leave the area in a similar condition before the start of the project where finishes are to remain.

1.17 MISCELLANEOUS EQUIPMENT CONNETIONS

A. Certain categories of fixtures and equipment, including kitchen equipment, sterilizers, washers, laundry and laboratory equipment, require piping connections and duct connections as shown on the drawings. Equipment will be furnished and set in places by the equipment supplier.

B. Make all final connections to these fixture and equipment, as indicated and in accordance with the manufacturer’s recommendations. All piping connections shall be valved and final connections made with unions.

C. Fixtures and equipment, unless otherwise noted, will be furnished complete with the basic plumbing supply and waste trim. The trim will generally be furnished “loose” and shall be installed under this work. Countertop sinks furnished “loose” shall also be installed by the Plumbing Contractor.

D. Provide supplies, supply stops, traps, shut-off valves, fixture drains, continuous wastes and indirect wastes. Provide a water-hammer arrestor on the system side of each automatic (quick-closing) valve on water supply lines. Items not specifically described elsewhere in these specifications shall be of the same manufacturer as similar items specified in conjunction with the plumbing fixtures.

E. Supply piping and devices connecting to equipment, where exposed to view in the finished space, shall be chrome plated and insulation shall be omitted.

F. Roughing-in drawings shall be obtained for the various fixtures and items of equipment as the time approaches when such information is required; allow a reasonable period, from the time of notice to obtain this information.

G. Connections to equipment shall be in accordance with manufacturers installation guidelines. Any additional accessories recommended by the manufacturer such as gauges, shut-off valves, unions at connection points, etc., shall be provided by this Contractor.

1.18 EQUIPMENT SELECTION

A. Materials and equipment furnished under this contract shall be in strict accordance with the specifications and drawings and shall be new and of best grade and quality. When two or more articles of the same material or equipment are required, they shall be of the same manufacturer.

B. The selection of materials and equipment to be furnished under this contract shall be governed by the following:

1. Where trade names, brands, or manufacturers of equipment or materials are listed in the specifications, the exact equipment listed shall be furnished. Where more than one name is used, the Contractor shall have the option of selecting between any one of the several specified. All products shall be first quality line of manufacturer's listed.

2. Where the words "or approved equal: appear after a manufacturer's name, specific approval must be obtained from the Architect during the bidding period in sufficient time to be included in an addendum. The same shall apply for equipment and materials not named in the specifications, where approval is sought.

3. Where the words "equal to" appear, followed by a manufacturer's name and sometimes a model or series designation, such designation is intended to establish a model or series designation, such designation is intended to establish quality level and standard features. Equal equipment by other manufacturers will be acceptable, subject to the Engineer's approval.

C. Substitute equipment of equal quality and capacity will be considered when the listing of such is included as a separate item of the bid. State the deduction or addition in cost to that of the specified product.

D. Before bidding equipment, and again in the preparation of shop drawings the Contractor and his supplier shall verify that adequate space is available for entry and installation of the item of equipment, including associated piping and accessories. Also verify that adequate space is available for servicing of the equipment.

E. If extensive changes in pipe, or equipment layout or electrical wiring and equipment are brought about by the use of equipment which is not compatible with the layout shown on the drawings, necessary changes shall be deemed to be included in the contract.

1.19 SHOP DRAWINGS

A. Refer to Section 016000 Product Requirements.

B. Shop drawings for equipment fixtures, devices and materials shall be labeled and identified same as on the Contract Documents. Failure to do so may be cause for rejection of shop drawings.

C. The review of shop drawings by the Architect or Engineer shall not relieve the Contactor from responsibility for errors in the shop drawings. Deviations from specifications and drawing

requirements shall be called to the Engineer's attention in a separate clearly stated notification at the time of submittal for the Engineer's review.

D. Shop drawings for the following Plumbing equipment and materials shall be submitted:

1. Pipe, fittings and joining methods for the various systems.
2. Pipe hangers and saddles.
3. Valves.
4. Gauges.
5. Pipe insulation
6. Supply system specialties.
7. Plumbing fixtures and trim
8. Natural Gas Piping

1.20 OPERATING AND MAINTENANCE MANUALS

A. Refer to Section 017823 Operation and Maintenance Data.

B. All shop drawing and installation, maintenance and operating instruction pamphlets or brochures, wiring diagrams, parts list and other information, along with warranties, shall be obtained form each manufacturer of the principal items of equipment. In addition, the Contractor shall prepare a chart listing all items of equipment which are furnished under his contract and indicating the nature of maintenance required, the recommended frequency of checking these points and the type of lubricating media or replacement material required.

C. These shall be assembled into three-ring loose lead binders or other appropriate binding. An index and tabbed sheets to separate the sections shall be included. These shall be submitted to the Architect or Engineer for review. Upon approval, manuals shall be turned over to the Owner.

1.21 RECORD DRAWINGS

A. Refer to Section 017839 Project Record Drawings.

B. Each Contractor shall maintain a separate set of prints of the contract documents and shall show all changes or variations, in a manner to be clearly discernible, which are made during construction. Upon completion of the work, these drawing shall be turned over to the Architect.

1.22 WARRANTIES

A. This Contractor shall warrant all workmanship, equipment and material entering into this contact for a period of one year of date of final acceptance or date of beneficial use, as agreed to between Contractor and Architect. Any materials or equipment proving to be defective during this warranty period shall be made good by this Contractor without expense to the Owner.

B. This provision is intended specifically to cover deficiencies in contract completion or performance which are discovered after systems are placed in operation. Also included shall be supplementary assistance in balancing, adjusting or providing operating instructions as the need develops, and replacing overload heater elements in starters where necessary to keep systems in operation. Heater element sizes shall not exceed the motor manufacturer's recommendations.

C. This provision shall not be construed to include maintenance items such as replacing filters, and cleaning strainers after these have been done for final close-out.

D. Provisions of this warranty shall be considered supplementary to warranty provisions under General Conditions.

1.23 PROJECT CLOSEOUT

A. Refer to Section 017700 Closeout Procedures.

1.24 OPERATIONS AND ADJUSTMENT OF EQUIPMENT

A. As each piping system is put into operation, all items of equipment included therein shall be adjusted to proper working order. This shall include balancing the domestic hot water return system,

B. Caution: Verify that all bearings are lubricated, all motors are operating in the right direction, and correct overload heater elements are provided on all motors. Do not depend wholly on the electrician's judgment in these matters. Follow specific instructions in regard to lubrication. Do not oil or grease presealed ball bearings unless upon manufacturer's specific instructions.

C. Test relief valves, air vents and regulating valves to insure proper operation.

1.25 OPERATING DEMONSTRATION AND INSTRUCTIONS

A. Refer to Section 017900 Demonstration and Training as well as individual Division 22 Sections for requirements.

B. The Contractor shall set the various systems into operation and demonstrate to the Owner and Architect that the systems function properly and that the requirements of the Contract are fulfilled.

C. The Contractor shall provide the Owner's representatives with detailed explanations of operation and maintenance of equipment and systems. A thorough review of the operating and maintenance manuals shall be included in these instructional meetings.

D. A minimum of 8 hours shall be allowed for instructions to personnel selected by the Owner. Instructions shall include not less than the following:

1. Show locations of items of equipment and their purpose.
2. Review binder containing instructions and equipment and systems data.

3. Coordinate written and verbal instructions so that personnel understand each.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION– NOT APPLICABLE

END OF SECTION 22 0001

SECTION 22 0002 – PLUMBING WORK IN EXISTING BUILDINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section Includes the following:

1. General Requirements for Renovation Work
2. Inspection of Existing Building
3. Asbestos Material
4. Work Hours
5. Tobacco Products
6. Barriers and Signage
7. Storage of Tools and Materials
8. Protection of Existing Building and Equipment
9. Confined Spaces
10. Noise, Fumes and Dust Control
11. Soldering Welding and Cutting
12. Removals Disposal and Reuse
13. Draining, Flush and Refill of Piping Systems
14. Continuity of Systems
15. Cutting and Patching
16. Cleaning

1.2 GENERAL REQUIREMENTS FOR RENOVATION WORK

A. Refer to Article 1 Specification requirements and notes on the drawings where provided for requirements related to renovation work.

B. Meet with the Owner, Architect and Engineer before demolition or construction begins to establish procedures for work effort in the existing building. Provide names and phone numbers and establish emergency contact information where work is performed. Provide security information requested by the Owner for all personnel who will be working on site. Educate all construction personnel in regard to the project requirements and procedures.

C. Coordinate effort with other contractors involved in the renovation project to minimize the disruption, phasing of work, share cleaning responsibilities, etc.

1.3 INSPECTION OF EXISTING BUILDING

A. Each bidder shall inspect the project site and the existing building in the early time frame of the bidding period. Conditions shall be compared with information shown on the drawings. Report

to the Architect/Engineer any significant discrepancies which may be discovered in a timely fashion so that direction may be provided in an addendum. After the contract is signed, no allowance will be made for failure to have made a thorough inspection.

1.4 ASBESTOS MATERIAL

A. Abatement, removal or encapsulation of existing materials containing asbestos is not included in the Contract. Necessary work of this nature will be arranged by the Owner to be done outside of this construction and remodeling project by a company regularly engaged in asbestos abatement. Such work will be scheduled and performed in advance of work in the construction and remodeling project.

B. If, in the performance of the mechanical work, materials are observed which are suspected to contain asbestos, the Contractor shall immediately inform the Architect / Engineer who in turn will notify the Owner. Work that would expose workers to the inhalation of asbestos particles shall be terminated. Work may be resumed only after a determination has been made and unsafe materials have been removed or encapsulated and the area declared safe.

1.5 WORK HOURS

A. Work hours for construction shall be as defined in Section 01150- Project Phasing or other specification sections or drawing notes.

B. Where allowed, contractors may work normal hours except after hours is required for operations that are noisy, generate obnoxious fumes or dust, require shut down of ventilation systems, etc. The Owner reserves the right to stop normal hour work where the Owner deems the effort to be disruptive to their ongoing operations.

C. Any work that creates hazards in or requires closure of corridors, exit pathways or stairwells work in corridors must be performed after hours when the building is not occupied.

D. All occupied areas, corridors exit pathways and stairwells must be left clean, lighted (including emergency egress and exit signage) usable and safe at the end of each work shift.

E. Access to the work area shall be coordinated with the Owner; follow all security protocols for parking, sign in, key control, etc. established by the Owner.

1.6 TOBACCO PRODUCTS

A. Smoking or chewing tobacco products are expressly prohibited to be used within the building and on the premises except where specifically permitted by the Owner or in construction company trailers or vehicles where permitted by the construction company.

PART 2 - PRODUCTS- NOT APPLICABLE

PART 3 - EXECUTION

3.1 BARRIERS AND SIGNAGE

A. Barriers and signage shall be provided as appropriate to identify work areas and to prevent unauthorized entry by non construction personnel. Refer to appropriate Division 1 specification requirements and notes on the drawings where provided.

B. All barriers and signs should be high visibility type and be maintained at all times.

3.2 STORAGE OF TOOLS AND MATERIALS

A. Store all site material and tools in the active job site area, specific storage areas are not provided except where otherwise noted for material and tools. The contractor is responsible for security.

B. Storage is specifically prohibited in means of egress paths and stairwells.

3.3 PROTECTION OF EXISTING BUILDING AND EQUIPMENT

A. The Owners' property and the property of other contractors shall be respected at all times. Provide drop clothes, visqueen or other suitable barriers where dust and debris is generated. Tape ends of barriers for sealing purposes.

B. Provide 55 gallon drums or smaller buckets as appropriate and use funnels where draining liquid systems.

C. Provide plywood sheets for protection of walls, floors or Owner equipment or systems that are remaining in place near demolition or new installation work where there is possible damage from heavy material or equipment.

3.4 CONFINED SPACES

A. Notify the Owner when performing work in confined spaces. Provide a written procedure for approval and obtain approval from the Owner when so requested.

B. All work in confined spaces shall be done in accordance with OSHA regulations.

3.5 NOISE, FUME, AND DUST CONTROL

A. Provide barriers and ventilation as required to limit the effect from construction generated noise

fume and dust control on spaces that continue to be occupied by the Owner. Refer to protection of building and equipment paragraph above. In addition to the basic protection, provide additional visqueen barriers to limit airborne migration of dust and fumes. Provide supplemental portable fans to exhaust air to the outside of the building where appropriate. Use of the Owners' ventilation systems to induce positive or negative pressure is prohibited unless authorized by the Owner. Shut off ventilation systems serving the area where use of these systems can induce fumes or dust into return or exhaust ducts. Where systems need to remain operational for occupied areas, arrange to temporarily shutoff portions of the system in the work area. Provide taped visqueen covers on HVAC air supply and exhaust devices to limit migration. Coordinate all efforts requiring modification or shutdown of ventilation systems with the Owner. Contractor shut down of these systems is prohibited without Owner permission.

B. Arrange with the Owner when required to shutoff fire alarm or smoke detectors to perform work. With the Owners' prior approval. Cover smoke detectors where needed to prevent false alarms due to work generated dust or fumes. Minimize outages and coordinate efforts to limit the effect due to false alarms.

C. Where significant dust or fume generating work, welding or cutting operations are required for removal or new work, provide fume removal equipment with telescoping arms to locally capture the fumes. Fume exhaust shall be directed outside or adequately filtered and recirculated.

D. Areas shall be thoroughly ventilated after completion of the work on a daily basis to remove residual odors and fumes before occupancy occurs the next day.

E. Provide vacuum cleaners and other equipment to clean and restore conditions.

3.6 SOLDERING WELDING AND CUTTING

A. For soldering, welding or cutting operations, provide insulated, fire rated barriers and blankets to isolate cover and protect remaining systems and materials, furniture, furnishings, floors, walls, ceilings, etc.

B. Refer to noise, fume and dust control provisions in the previous paragraph.

C. Obtain burn approval from the Owner before commencing any soldering or welding effort. Coordinate outages of fire alarm systems as noted in the previous paragraph.

D. Provide a Fire Watch at each welding location. Fire Watch personnel shall be dedicated for the sole purpose of fire prevention during welding operations. All Fire Watch personnel shall be properly trained and equipped, including fire extinguisher, fire blanket and communication equipment for assistance request.

E. Provide a fire extinguisher at every soldering or welding location.

3.7 REMOVALS, DISPOSAL, AND REUSE

A. Refer to the drawings for the scope of remodeling in the existing building.

B. Cooperate with the General Contractor regarding all removal and remodeling work. Each Contractor shall remove existing work which is associated with his trade and which will be superfluous when the new work is installed and made operational.

C. Extraneous piping which is or becomes accessible shall be removed and stubs shall be capped at the first active pipe encountered. Piping that is and remains inaccessible shall be abandoned. Ends of abandoned pipe shall be capped so as to be concealed by finished surfaces. Upon completion of the work no abandoned duct. Pipe, valve or stub shall extend thru finished floors, walls or ceilings.

D. When it is necessary to reroute a section of active piping the rerouted section shall be installed before removing the existing in order to minimize system down time. Rerouted sections shall be insulated as required for new work. Patch insulation on existing piping which has been damaged or removed in this work.

E. Where existing piping is removed and holes are left in existing walls, finished ceilings, floors, etc., these holes shall be patched using materials to match the existing construction to restore and maintain the integrity of the existing partition.

F. Materials and equipment which are removed shall not be reused within the scope of this project unless specifically noted to be relocated or reused. Turn over to the Owner and place where directed on the premises all removed material and equipment so designated by the Owner. All material and equipment which the Owner does not wish to retain shall become the property of the Contractor responsible for removal and shall be removed from the premises and properly disposed.

G. Disposal of materials regulated by EPA shall be done in strict accordance with latest requirements. Provide documentation to the Owner that disposal was properly executed.

H. Remove, store and reinstall lay-in ceiling tile and grid as needed to perform work in areas where such removal and re-installation is not to be done by the General Contractor. Damaged tile and/or grid shall be replaced with new matching tile and/or grid.

I. In areas of minor work where the space is not completely vacated, temporarily move portable equipment and furnishings within the space as required to complete the work. Coordinate this activity with Owner. Protect the Owner’s property by providing dust covers and temporary plastic film barriers to contain dust. Remove barriers and return equipment and furniture upon completion of the work.

J. Refinish any surface disturbed under this work match existing, except where refinishing of that surface is included under the General Contract.

3.8 DRAINING, FLUSHING, AND REFILL OF PIPING SYSTEMS

A. Existing liquid systems shall be drained as required before removal or connection of new piping

extensions.

B. Draining of the system shall be the responsibility of the contractor. Provide threaded connections, etc. to direct fluids to drainage points. Water systems may be drained to sanitary systems or where permitted, to storm systems. Verify any chemical treatment, inhibitors or freeze protection additives in the existing systems and obtain a permit from the local sewer authority before disposing.

C. Provide drums or containers to accept other than water drainage and remove from the premises and properly dispose. Provide visqueen to protect Owners' property when opening pipes, even where piping has been drained to prevent damage from residual liquid that remains in the pipe.

D. After new piping is connected and tested, flush clean and disinfect all existing piping that has been drained and new piping as specified in Section 22001, Basic Plumbing Requirements. Provide full port, 0.75" ball valves with hose connectors as described to facilitate flushing operations.

3.9 CONTINUITY OF SYSTEMS

A. Work shall be so planned and executed as to provide reasonably continuous services of existing systems throughout the construction period. Where necessary to disrupt services for short periods of time for connection, alteration or switch-over, the Owner shall be notified in advance and outages scheduled at the Owner's reasonable convenience.

B. Submit, on request, a written step-by-step sequence of operations proposed to accomplish the work, The outline must include tentative dates, times of day for disruption, downtime and restoration services. Submit the outline sufficiently in advance of the proposed work to allow the Architect or Engineer to review the information with the Owner. Upon approval, final planning and the work shall be done in close coordination with the Owner.

C. Shutdown of system and work undertaken during shutdowns shall be bid as being done during normal working hours. If the Owner should require such work be performed outside of normal working hours, reimbursement shall be made for premium time expenses only.

3.10 CUTTING AND PATCHING

A. Refer to Division 1 – General Requirements for information regarding cutting and patching.

B. Plan the work well ahead of the general construction. Where pipes are to pass thru new walls, partitions, floors, roof or ceilings, place sleeves in these elements or arrange with the General Contractor to provide openings where sleeves are not practical. Where sleeves or openings have not been installed, cut holes and patch as required for the installation of this work, or pay other trades for doing this work when so directed by the Architect. Any damage caused to the building shall be repaired or rectified.

C. Where pipes are to pass through, above, or behind existing walls, partitions, floors, roof or ceiling, cutting, patching and refinishing of same shall be included in this contract. Core drilling and saw cutting shall be utilized.

D. All material, methods and procedures used in patching and refinishing shall be in accordance with applicable provisions of specifications governing the various trades. The final appearance and integrity of the patched and refinished areas must meet the approval if the Architect. Wall, floor and ceiling refinishing must extend to logical termination lines (entire ceiling of the room repainted, for instance), if an acceptable appearance cannot be attained by finishing a partial area.

E. Provide steel angle or channel lintels to span openings which are cut in existing jointed masonry wall where the opening span exceeds 16 inches. Provide framing around roof openings for required support of the roof deck.

F. The Plumbing Contractor shall engage a Roofing Contractor on a subcontractor basis for roofing and roof insulation work necessitated by his work. The Roofing Contractor shall be certified for installation and repair of the roofing system so as to maintain the existing roofing warranty, if existing.

3.11 CLEANING

A. Debris, dust, dirt, etc shall be removed daily, particular attention shall be paid to areas that the Owner is continuing to occupy or use; any mess created in corridors, stairwells and egress paths that are maintained during construction shall be cleaned immediately.

B. The Owners dumpsters and trash receptacles shall not be used. If a dumpster is required, it shall be provided by the contractor and located where approved by the Owner. Coordinate dumpster requirements with other contractors.

C. Before turning an area back over to the Owner, thoroughly clean the space to leave the area in a similar condition before the start of the project where finishes are to remain. The contractor shall also clean duct interiors and interior components of new or existing air handling system equipment if dirt, dust or debris have generated in the course of work have accumulated on these surfaces.

END OF SECTION 22 0002

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SECTION 22 0005 – EXCAVATION, BACKFILL AND SURFACE RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Excavating and backfilling for utility trenches.

1.2 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

E. Fill: Soil materials used to raise existing grades.

F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below topsoil materials.

H. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.3 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

1.4 GENERAL

A. Excavate for all in-grade, under-floor piping, underground, exterior piping, underground tanks and incidental work which are included in the Plumbing contract. Backfill to finish grade or to levels consistent with the General Contractor's and Site Contractor's activities. Cut existing street, drive and parking lot paving, walks, curbs and other permanent hard surfaces which are to be encountered. Repair or restore exterior surfaces to original condition where such are not affected by Division 2 – Site Work. Cut existing floor slabs and replace slabs in conformance to 22 0002.

B. Excavation and trench wall supporting, cribbing, sloping and stepping of excavations required for safety shall be done in accordance with OSHA and local requirements. Pumping of water from excavations and trenches which may be required during construction shall be included in this contract.

C. Contact the Ohio Utilities Protection Service (1-800-362-2764) or (811) well in advance of the start of any excavation to determine if any of the utility companies or departments have underground utilities in or near the project area.

D. Contact local water and sewer departments, gas company, electric company, telephone company, etc., regarding the possibility of encountering existing utilities. The integrity of all existing utilities shall be respected.

E. Existing utilities encountered during excavation work shall be protected in a manner acceptable to the utility owner. Any utilities that are damaged shall be repaired or replaced by the Contractor to the full satisfaction of the utility owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Bedding Course: Naturally or artificially graded natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

B. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

PART 3 - EXECUTION

3.1 EXCAVATION FOR UTILITY TRENCHES

A. Trenches for interior and exterior piping shall be over-excavated and the pipe shall be laid on 6” minimum depth sand bed.

B. Backfilling of excavations and trenches inside the building and outside under paved or other hard surfaced areas, shall be with graded pea gravel, graded coarse sand or compacted, crushed limestone, 3/4” maximum size, to prevent undue settlement. Backfill material for plastic piping shall be pea gravel or sand. Other excavations and trenches shall be backfilled with similar materials up to 18” above the top of the piping. The remainder shall be with similar materials or with excavated material having no large clods, stones or rocks.

C. Maintain in place adequate barricades, guards, planking, plating signage, warning lights, etc., at and around excavations.

D. Backfill shall be mechanically compacted in layers not over 6” deep. Water settling shall not be permitted. Where excavations have not been properly filled or where settlement occurs, they shall be refilled, compacted, smoothed off, and finally made to conform to the initial requirements. Excess excavated materials shall be removed from the site or disposed of as directed by the General Contractor. Refer to Division 31 Earthwork for compaction requirements.

E. Concrete floor slabs, paving, sidewalks, curbs sodded and other finished surfaces which have been damaged or removed in order to install the underground work shall be replaced but this Contractor equal to original conditions. This requirement is not applicable in areas where the General Contractor or the Site Contractor is obligated to provide new surfaces.

F. Excavation, backfill, surface repair and traffic control within the public right-of-way shall be in accordance with governing agency rules and regulations. Any fee for activity in the roadways shall be included in this contract so that no additional cost will accrue to the Owner.

G. All exterior underground piping shall be protected against future excavation damage by placing a plastic tape warning marker in each trench during backfill. Tape shall be 6’ wide with black letters identifying the piping service. Tape shall be equal to that manufactured by Seton. Install tape full length of the trench approximately 18’ above and on the centerline of the pipe.

END OF SECTION 22 0005

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SECTION 22 0519 - METERS AND GAUGES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gauges.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 PRESSURE GAUGES

A. Pressure gauges, including compound gauges and vacuum gauges, shall be Bourdon tube type with 4-1/2” dial and cast aluminum case, equal to Trerice 600C Series. Accuracy shall be 1% at mid-range.

B. Pressure gauges for low pressure application, calibrated in inches of water gauge, ounces per sq. in. or 0-5 psi, as appropriate, shall be equal to Trerice 860.

C. Pressure gauges at pumps shall be liquid filled Bourdon tube type with 4” dial and stainless steel case and internals, equal to Trerice 700 Series.

D. A brass cock or bronze ball valve and a pressure snubber shall be furnished with each pressure gauge.

E. Ranges of pressure gauges shall be selected to be consistent with anticipated pressures. Range shall be approximately twice the normal system working pressure at the gauge location.

2.2 TEST PLUGS

A. Pressure-temperature test plugs for insertion of pressure gauge or thermometer shall be a brass fitting with neoprene or Nordel self-sealing insert and knurled brass cap with plastic capture tab. Fittings shall be equal to Peterson “PT”. Furnish two thermometers and two pressure gauges with integral insertion stem appropriate for use with the test plugs.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Thermometers shall be installed where shown on the drawings and also at:

B. Pressure gauges shall be installed where shown on the drawings, where required by applicable codes and also at:

C. Thermometers and gauges shall be positioned to be read with unobstructed view from the floor. Pressure-temperature test plugs shall be installed where shown, located in a position to be most readable.

D. Install thermometer wells in piping tees in the vertical position. Fill the well with oil or graphite and secure the thermometer in position

END OF SECTION 22 0519

SECTION 22 0520 – COMMON PIPING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Dielectric fittings.
2. Mechanical sleeve seals.
3. Sleeves.
4. Escutcheons.
5. Grout.
6. Piping Systems - Common Requirements.
7. Equipment installation requirements common to equipment sections.

1.2 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

B. Welders shall be qualified and fully certified in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications.

C. Welding procedures and testing shall comply with ANSI Standard B31.1.0 Standard Code for Pressure Piping, Power piping and The American Welding Society Welding Handbook.

D. All pressure piping systems regulated by the Ohio Pressure Piping Systems Code, Chapter 4101:8 shall conform to applicable requirements of the Code. Welders shall carry a current State of Ohio, Pressure Piping Board Certification. Each welder shall submit a copy of their signed performance qualification record to the Engineer for approval prior to beginning work on any pressure piping system.

E. Electrical Characteristics for Plumbing Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

2.1 DIELECTRIC CONNECTORS

A. A dielectric connector shall be incorporated at each connection between ferrous and copper piping. Connectors shall be:

1. Dielectric coupling with non-conductive polymer liner, Lochinvar Corp. “V-line” Dielectric fitting on services 180 degrees and less.

2. Dielectric flange with non-metallic bolt hole grommets and gasket.

3. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F .

2.2 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

B. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

C. Pressure Plates: Plastic/Carbon steel/Stainless steel. Include two for each sealing element.

D. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating/Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 SLEEVES

A. Schedule 40 black steel pipe or 18 gauge galvanized steel poured concrete floors, walls and roof decks.

B. 26 gauge galvanized sheet or Schedule 40 clack steel pipe in the other than poured concrete.

C. Combination pre-set floor sleeve and firestopping assembly equal to Hilti CP 680.

D. Concrete curbs may be formed and poured around multiple pipe risers in rooms with waterproofing floor membrane, in lieu of the Smith 1720 riser sleeve and clamping ring. Curbs shall be 4” wide x 4” high with chamfered corners. Membrane and curbing shall be arranged to maintain the integrity of the membrane. Pipe sleeves shall be as described for normal areas or extended to the top level of the curb where the concrete is full depth throughout the curbed area.

2.4 ESCUTCHEONS

A. Escutcheon plates shall be split-ring chromium plated pressed steel. Plates shall be sized to cover the surface penetration and sleeve. Plates shall be installed on exposed piping in finished rooms and areas where pipes penetrate walls, floors, ceilings or overhead structure.

2.5 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

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. Pipe and tubing shall be cut and fabricated to field measurements and run parallel to normal building lines. Pipe ends shall be cut square and ends reamed to remove burrs. The pipe interior shall be cleaned of foreign matter before erection of the pipe.

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. Piping shall not be run above electrical switchgear or panelboards, nor above the access space in the immediate vicinity of the equipment, in accordance with N.E.C. Article 384.

F. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

G. Install piping to permit valve servicing.

H. Install piping adjacent to equipment and specialties to permit servicing and maintenance.

I. Install piping free of sags and bends.

J. Install fittings for changes in direction and branch connections.

K. Install piping to allow application of insulation.

L. Select system components with pressure rating equal to or greater than system operating pressure.

M. Install escutcheons for penetrations of walls, ceilings, and floors.

N. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

O. Verify final equipment locations for roughing-in.

3.2 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping 2” and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping 2-1/2” and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.3 PIPE SLEEVES

A. Pipe sleeves, floor and wall openings, water protective curbing and escutcheon plates shall be provided as described below. Pipe sleeves shall be placed in all floor slabs, poured concrete roof decks, walls and partitions, except as noted below, to allow new piping to pass thru and allow for expansion, contraction and normal movement of the pipe. Sleeves are also required for all existing piping related to the various trades in new walls, partitions, floors and roof slabs, same as for new piping.

B. Sleeves are not required in the following:

1. In floor slabs on grade.

2. In stud and gypsum board or plaster walls and partitions which are not fire rated.

3. For uninsulated pipe passing thru masonry walls and partitions and stud and gypsum board or plaster walls and partitions. Sleeves are required however, for uninsulated piping which expansion, contraction and other pipe movement can be expected.

4. In core drilled openings in solid concrete not requiring water protection. Sleeves are required, however, at core drilling thru hollow pre-cast slabs and concrete block walls, to facilitate containment of required firestopping material.

5. In large floor openings for multiple pipe and duct risers which are within a fire rated shaft, unless the opening is to be closed off with concrete or other material after pipe are set.

C. Length of wall sleeves shall be such that the sleeve ends are substantially flush with both sides of the wall or partition. Floor sleeves shall be flush with the bottom and top of the floor slab except, in mechanical rooms and other areas which might have water on the floor, sleeves shall project a minimum of 1" above finished floor. Pipe sleeves shall be sized to allow insulation to pass thru the sleeve, for insulation requiring continuous vapor barrier (domestic cold water, chilled water refrigerant, etc.). Where vapor barrier continuity is not needed, the sleeve may be sized to pass the pipe only or the insulation as well. Refer to the following paragraph for qualification and exceptions relating to firestopping.

D. Pipe sleeves which are part of firestopping assemblies shall conform to the requirements of the assembly with particular emphasis regarding size, annular space, length, passage or non-passage of insulation and the installation of the sleeves.

E. Where firestopping is not required, the annular space between the sleeve, core drilling or opening and the pipe or pipe insulation shall be closed with caulking to retard the passage of smoke.

F. Where uninsulated pipes requiring no pipe sleeves pass thru non-fire rated floor, wall or partition, the annular space shall be closed with material and methods compatible with the wall or partition material (Type M masonry grout, drywall joint compound, plaster, etc.).

3.4 Mechanical Seals

A. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Install steel pipe for sleeves smaller than 6 inches in diameter.
2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

B. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.5 GROUTING

A. Mix and install grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION 22 0520

SECTION 22 0523 – GENERAL DUTY VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ball valves.
2. Check valves.
3. Balancing valves.

B. Related Sections:

1. Division 22 Plumbing piping Sections for specialty valves applicable to those Sections only. Section 22 0553 "Identification for Plumbing Systems" for valve tags and schedules.

2. Valves for natural gas, compressed air vacuum systems are specified in the system specification. See appropriate Division 22 specification.

1.2 SUBMITTALS

A. Product Data: For each type of valve indicated.

1.3 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance: ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

C. Sweat end valves of equal construction and features are acceptable in lieu of those specified with screwed ends. Valves of equal construction and features with ends compatible with mechanical joint couplings are acceptable on such systems, and may be manufactured by the coupling system manufacturer. Grooved end valves shall conform to ANSI/AWWA Standard C-606.

D. Ball valves in piping which is to be insulated shall have extended shaft necks to accommodate the insulation.

E. All valve for Domestic potable water systems (cold, hot hot return, etc.) shall be “lead free” in accordance with the Federal Safe Water Act (S3874) definition and NSF/ANSI-61 approved

PART 2 - PRODUCTS

2.1 Refer to valve schedule on the Drawings for piping material and applications.

2.2 MANUFACTURERS

A. Valves shall be as specified above, or of equal construction manufactured by:

1. Apollo
2. Crane/Stockham
3. Armstrong
4. Watts
5. Bell & Gossett
6. Nibco
7. Milwaukee

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

A. Drain valves shall be the same as for the shut-off service. Provide a ¾" hose thread adapter on the outlet of each drain valve that is not piped to a drainage point. Hose thread adapters on drain valves of potable water piping shall be fitted with a non-removable vacuum breaker.

B. Internals shall be removed and the remaining elements of sweat end valves shall be protected against heat damage during soldering or brazing

C. Valves shall be installed with the stem at or above the centerline of the pipe. Valves shall be located to be accessible for operation, servicing and/or removal.

D. Packing glands shall be tightened before placing the valves in service.

END OF SECTION 22 0523

SECTION 22 0529 – PIPE HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Steel pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Hanger Rods and Attachments.
5. Pipe Riser Supports
6. Roof Supports

1.2 DEFINITIONS

A. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.3 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.

B. Design seismic-restraint hangers and supports for piping and obtain approval from authorities having jurisdiction.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Steel pipe hangers and supports.
2. Thermal-hanger shield inserts.
3. Powder-actuated fastener systems.

1.5 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to ASME Boiler and Pressure Vessel Code: Section IX.

2.1 STEEL PIPE HANGERS

A. Hangers and supports for piping shall be equal to the Anvil catalog numbers as follows:

1. General service - clevis type - Fig. 260.

2. Uninsulated copper tubing - copper plated clevis type - Fig. CT-65 (or plastic coated clevis, or fiberglass construction).

3. Where the length of the hanger rod between the top of the hanger and the attachment is 3" or less, clevis type hangers with rollers, Fig. 181, shall be used to allow for expansion travel

B. Hangers on insulated horizontal piping shall be oversized to surround the pipe insulation. To protect the insulation from damage or inordinate compression due to concentrated weight, the following shall be provided at each hanger:

1. Pipe 2" and smaller – Anvil Fig. 168 18 ga. sheet metal rib-lock shield with belled ends, 12" long.

2. Pipe 2-1/2" and larger – wood blocking to prevent crushing insulation, with Anvil Fig. 168 18 ga. Sheet metal rib-lock shield with belled ends, 12” long.

C. The first two hangers on piping connecting to motor driven equipment shall be fitted with a steel spring and neoprene vibration isolation section similar to Mason Industries, No. 30N.

2.2 TRAPEZE HANGERS

A. Trapeze hangers for numerous pipes run in parallel may be utilized. Horizontal support members shall be unistrut type section with pipe rollers (to allow for expansion travel) and spring and nut connectors, suspended with hanger rods and attachments similar to individual pipe hanger suspension.

2.3 HANGER RODS AND ATTACHMENTS

A. Hanger rods shall be solid steel, threaded-end or all-thread rod, of diameter listed below or matching manufacturer’s provisions. A hanger attachment device (for attachment to the structure) and locking nuts at the hanger attachment shall be provided on each hanger. Locking nuts shall be provided at each clevis hanger.

Pipe Size	Min. Rod Dia.
1" and smaller	1/4"
1-1/4" to 3"	3/8"

4" to 6"	1/2"
8"	5/8"
10”	3/4”
12”and larger	7/8”

B. Hanger rod attachment devices for attachment to the structure shall be:

1. Pre-set concrete inserts.

2. After-set steel expansion type concrete inserts.

3. Beam clamps for steel construction equal to Anvil Fig. 92, 93, or 94. Utilize swivel type in sloped steel construction to provide vertical support of pipe without bending hanger rods.

4. Side beam bracket for wood construction equal to Anvil Fig. 206.

5. Channel support system equal to Unistrut or Hilti.

2.4 PIPE RISER SUPPORTS

A. Riser clamps on cold service insulated piping shall be:

1. Insulated Pipe size 1-1/2” and smaller shall be factory (Pipe Shields E1000) or shop fabricated assembly Fig. 261 with high density calcium silicate insulation and galvanized steel jacket.

2. Insulated Pipe size 2” and greater shall be factory fabricated assembly Pipe Shields, Inc. E1000.

3. Un-insulated copper tubing – Anvil Fig CT-121 or CT-121C

4. Un-insulated steel piping – Anvil Fig. 261.

2.5 ROOF SUPPORTS

A. Pipe supports for pipe running across the roof shall be manufactured by Advanced Support Products, requiring no penetration of the roofing membrane. The support system shall consist of round injection molded polypropylene bases, 12 gauge hot dipped galvanized Unistrut framing and adjustable hot dipped galvanized or cadmium plated hangers and cadmium plated hanger rods as detailed. Furnish protective slip sheets of roofing membrane for installation under the bases.

B. Pipe supports for pipe running across the roof shall be equal to Pate Model “PRS” roof support curb and “RAC” roller support assembly. Supports shall be heavy gauge galvanized steel roof curb with base plate, continuous welded corner seams, integral raised cant to match roof insulation, wood nailer, counterflashing and roller pipe supports. Units shall be field insulated on the inside with batt insulation.

3.1 INSTALLATION

A. Spacing of hangers shall be as follows:

1. Steel pipe - Vertical:
   a. At the base and 15 ft. maximum spacing unless otherwise shown.

2. Steel pipe - Horizontal:
   a. 2” size and smaller – 8 ft. intervals
   b. 2-1/2” thru 6” – 10 ft. intervals
   c. 8” and larger – 12 ft.. intervals.

3. Cast iron pipe - Vertical
   a. At the base and 15 ft. maximum spacing unless otherwise shown.

4. Cast iron pipe – Horizontal
   a. At 10 ft. intervals.
   b. Support each length of pipe not more than 18” from the joint.
   c. Support terminal ends of horizontal runs and branches and each change in direction.
   d. 5” and larger provide bracing to prevent horizontal movement in accordance with CISPI “Soil Pipe and Fittings Handbook”

5. Copper Tubing - Vertical
   a. At the base and 10 ft. maximum spacing unless otherwise shown.

6. Copper Tubing – Horizontal
   a. 1-1/4” size and smaller – 6 ft. intervals
   b. 1-1/2” thru 2” – 8 ft.. intervals
   c. 2-1/2” and larger – 10 ft. intervals

7. Plastic pipe
   a. Per manufacturer’s recommendations.

B. In piping systems with mechanical joint couplings, pipe hangers shall be provided on horizontal piping at normal specified intervals and, in addition, so that no pipe shall be left unsupported between any two couplings nor left unsupported whenever a change in direction takes place. Vertical piping shall be supported at normal specified intervals or every other pipe length, which ever is more frequent. The base of the riser or base fitting shall be supported.

C. Attachment of pipe hangers to the structure shall be with:

1. Pre-set concrete inserts in concrete construction of 4” minimum depth.

2. After-set concrete inserts, in 4” minimum depth concrete, set in drilled holes.

3. Provide anchoring where steel beam clamps are attached to sloping surfaces of beam flanges and where otherwise required to insure permanent attachment.

4. Side beam bracket in wood construction, secured to the wood joist with lag screws set in drilled pilot holes.

5. Unistrut channels with spring and nut rod connection may be utilized where a number of pipes are run parallel. Channel shall be attached to the structure with inserts or clamps.

6. Attachment to steel deck is prohibited. Span from steel structural members with supplementary steel shapes where direct attachment to structural members is not practical.

D. Attachment to manufactured trusses and other engineered structural members and supports shall be done in strict accordance with the structural manufacturers recommendations. Refer to the architectural and structural drawings for type of engineered structural systems being used. Connections to these structural members shall be made with connection devices and methods approved by the structural manufacturer. Provide additional supports with supplemental steel shapes when spacing between structural members exceeds specified distances.

E. Pipe hangers shall be adjusted to proper elevation and all hanger rods set in a vertical position before pipe insulation is installed.

F. Extended legs of pipe riser clamps shall be shortened as needed to maintain concealment of the clamp within the pipe chase. Insure that adequate support is still maintained.

G. Hanger assemblies which will remain exposed on completion of the project shall be painted before installation.

H. Pipe supports manufactured by Advanced Support Products for pipe running across the roof shall be installed in accordance with the manufacturer’s instructions and as detailed. Install protective slip sheets of roofing membrane under the bases to satisfy requirements of both the roofing manufacturer and the support system manufacturer.

END OF SECTION 22 0529

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SECTION 22 0553 - IDENTIFICATION FOR PLUMBING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Pipe labels.
3. Warning markers.
4. Valve tags.

1.2 SUBMITTAL

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. Labels, tags and markers shall comply with ANSI A13.1 for lettering size, colors and length of color field.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Each item or major equipment shall be labeled. This shall include and other similar equipment consistent with tags on drawings.

B. Labeling shall be:

1. Permanently attached engraved brass or plastic laminated signs with 1” high lettering. Signs on exterior equipments shall be brass.

2.2 PIPE LABELS

A. Pipe markings shall be applied to all piping.

B. Labeling shall be:

1. Adhesive Type – Strip-type markers fastened to the bare pipe or insulation with laminated or bonded application or plastic tape not less than 1-1/2” wide. On piping and insulation 6” and greater diameter provide full band.

2. Lettering heights shall be as specified by manufacturer for indicated pipe/pipe plus insulation size.

3. Markers shall extend fully around pipe and insulation or full circle at both ends of the marker.

4. Markers shall be color coded for service.

5. Flow direction arrows provided integral with the pipe marker or separate at each marker.

6. Service pressure for compressed air and natural gas piping systems.

7. In areas where exposure to water or high humidity is anticipated, provide washdown, fade-resistant style labels.

2.3 WARNING MARKERS

A. Underground line marker tape shall be permanent, bright-colored, plastic with continuous identification lettering. Tape over service lines that cannot be detected by a metal detector shall be multi-ply with an aluminum foil core.

2.4 VALVE TAGS

A. Each shutoff valve, other than at equipment, shall be identified with a stamped tag. Valves and tagging shall be scheduled, typewritten on 8-1/2” x 11” paper, tabulating valve number, piping system, abbreviation, location of valve (room or area) and service (e.g. – south wing reheat boxes).

B. Valve tags shall be polished brass or plastic laminate with solid brass S hook. Tags shall be engraved with “P” for Plumbing and the designated number.

2.5 ACCEPTABLE MANUFACTURERS

A. Labels, markings and tags shall be manufactured by:
1. W.H. Brady
2. Seton
3. Allen
4. Industrial Safety Supply
5. McMaster-Carr

PART 3 - EXECUTION

3.1 INSTALLATION

A. Identification marking and tagging shall be applied after insulation and painting has been completed.

B. Coordinate names, abbreviations and other designations used in plumbing identification work, with corresponding designations shown, specified, or scheduled on drawings.

C. The Plumbing, Fire Suppression and HVAC Contractors shall coordinate labeling, marking and tagging to attain coordinated and consistent systems of identification.

D. Equipment labeling shall consist of unit designation as shown on the drawings.

E. Pipe markers shall be placed at 25 ft. centers in mechanical rooms and concealed spaces and at 50 ft. centers in other exposed locations.

F. Refer to appropriate sections of this specification for installation of underground line marker tape.

G. Service pressure markings to be placed upstream and downstream of regulators at each pipe service label.

H. Valve tags shall be placed on each valve except those intended for isolation of individual items of equipment. Valve tag schedules shall be prepared as specified above.

END OF SECTION 22 0553

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SECTION 22 0719 - PIPE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Insulation Materials:

a. Fiberglass.

2. Protective Jacketing

1.2 SUBMITTALS

A. Product Data:

1. For each type of product indicated.

2. Thickness and covering table.

B. LEED Submittal:

1. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

B. Thicknesses shall be in compliance with ASHRAE 90.1.

2.1 INSULATION GENERAL

A. Refer to insulation schedule on the Drawings for piping material and applications.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

2.2 FIBERGLASS

A. Factory molded tubular fiberglass with “all service” jacket having an integral vapor barrier. The longitudinal joints of the jacket shall be overlapping with factory applied adhesive. In lieu of the factory adhesive, staples on 6” centers may be used with vapor barrier mastic applied to seal both the joint and staple holes. Butt joints shall be sealed with 3” wide ASJ pressure sensitive tape.

B. Vapor barrier jacket: White kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E 96/E 96M of 0.02 perm-inches.

C. Manufactures:
1. Johns Manville Corporation
2. Owens Corning Corp.
3. Knauf Fiber Glass
4. Manson

2.3 PROTECTIVE JACKETING

A. PVC Plastic

1. One-piece molded type fitting covers and sheet material, 10 mill thickness, off white color. Connection with special Z-joint closure and factory supplied snap-straps.

B. Aluminum Jacket

1. Formed aluminum sheet, 0.016 thickness, smooth finish with longitudinal slip joints and 2-inch laps. Fitting covers shall be same thickness die shaped fitting covers with factory attached protective liner.

2. Metal jacket bands shall be 3/8 inch wide, 0.015” thick aluminum.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be done by tradesmen specializing in insulation work in strict accordance with the manufacturer’s recommendations.

B. Overlap and seal all longitudinal joints. Staples and adhesive may be used as stated above. Tape and seal cross joints. Vapor barrier shall be continuous on insulation of all cold services. Vapor barrier type mastic shall be used w here needed to maintain a vapor seal.

C. Where insulation is terminated, insulation shall be beveled at 45 degrees and the beveled surface sealed with vapor barrier mastic. PVC caps over straight cut ends which have been vapor sealed may be used in lieu of beveling.

D. Mechanical joint fittings and couplings shall be considered as a part of the pipe line and shall be insulated. Bidders on the insulation work are cautioned to verify during the bidding period the extent of this work.

E. Insulation on cold service piping shall be run through floor and wall sleeves to maintain vapor barrier continuity. Insulation on other services may likewise be run continuous when sleeve size permits. Refer to Section 22 0529 for non-compressible insulation or blocking material and sheet metal saddles required at pipe hangers. Coordinate with the contractor on the furnishing, installation and detailed requirements of these. Provide insulation and vapor barrier on and around supports for pipe risers of services which require vapor seal so as to prevent sweating.

F. Re-insulate piping where existing insulation has been damaged or removed in the performance of work in this project.

G. Verify that piping has been tested before applying insulation materials and that piping surfaces are clean and dry, with foreign material removed.

H. Fittings, valves, flanges and other devices, both exposed and concealed, requiring insulation shall be covered same thickness as pipe insulation with:

1. Factory molded fitting insulation cover with PVC one-piece fitting cover.

2. Miter-cut segments of pipe insulation, held in place with adhesive and/or wire, filled with insulating cement smoothed to shape and covered with PVC one-piece fitting cover.

3. Fiberglass blanket insulation, held in place and covered with PVC one-piece fitting cover.

4. Oversized pipe insulation, where applicable, finished same as straight run pipe insulation.

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SECTION 22 1116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Under-building slab and aboveground domestic water pipes, tubes, fittings, and specialties inside the building.
2. Valves Schedules
3. Unions and Flanges.
4. Dielectric Connectors.
5. Pipe Sleeves
6. Escutcheons.

1.2 SUBMITTALS

A. Product Data: For each type of product used.

1.3 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic, potable domestic water piping and components. Include marking "NSF-pw" on piping.

C. Comply with NSF 61 for potable domestic water piping and components.

PART 2 - PRODUCTS

2.1 PIPING MATERIAL

A. Refer to piping and valve schedules on the Drawings for piping materials, valves, and applications.

2.2 UNIONS AND FLANGES

A. Unions on copper tubing, all bronze construction 150 lb., solder ends.

B. Unions on steel pipe 2” and smaller, malleable iron with ground seat, bronze to steel, 300 lbs., screwed ends.

C. Flanges on steel pipe with welded or screwed joints, 2-1/2" and larger. Gaskets shall be 1/16"thickness full face compressed sheet suitable for temperature and pressure ranges of the application.

D. Mechanical joints associated with grooved end pipe are acceptable in lieu of unions and flanges.

2.3 DIELECTRIC FITTINGS

A. Refer to Division 22 Section "Common Piping Materials and Methods" for dielectric fitting requirements.

2.4 PIPE SLEEVES

A. Refer to Division 22 Section "Common Piping Materials and Methods" for sleeve requirements.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Refer to Division 22 Section "Common Piping Materials and Methods" for basic piping installation requirements.

Piping shall be pitched for drainage. The low points shall be fitted with a ¾" drain valve (with hose thread adapter if not piped to a floor drain) except that on piping 1-1/4" and smaller where a drain valve is not shown, a drain plug is acceptable. Hose thread adapters on drain valves of potable water piping shall be fitted with a non-removable vacuum breaker.

B. Piping shall be installed consistent with good piping practice and run concealed wherever possible. Coordinate with other trades to attain a workmanlike installation.

C. Piping shall be supported as specified in Section 22 0529 Pipe Hangers. Pipe alignment in both the horizontal and vertical must be tightly maintained. Misalignment must be corrected to the satisfaction of the Engineer before insulation is applied and the system accepted.

D. Internals of sweat end valves shall be removed when damage or warping could occur due to applied heat of soldering. Where silver brazing is specified, solder connection of valves shall be used to reduce the danger of damage. Close open ends of piping during installation to keep interior of the pipe clean.

E. Install strainers as indicated on the drawings. Provide a nipple and ball valve in the blow down connection of each strainer 2" and larger.

F. Unions and flanges shall be installed at pipe connections to fixtures and equipment and as required for erection purposed.

G. Refer to Division 22 Section "Common Piping Materials and Methods" for dielectric fitting requirements.

H. Refer to Division 22 Section "Common Piping Materials and Methods" for sleeve requirements.

I. Refer to Division 22 Section "Pipe Hangers and Supports" for basic hanger and support requirements.

J. Refer to Division 22 Section "Identification for Plumbing Piping and Equipment" for equipment and piping labeling requirements.

3.2 FIELD QUALITY CONTROL

A. Piping Inspections:

1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
2. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

    a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
    b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

3. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

B. Piping Tests:

1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. 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 a separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Domestic water piping – hydrostatic at 125 psig for 6 hours at the low point of the system. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
6. Prepare reports for tests and for corrective action required.

C. Domestic water piping will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.3 PIPE CLEANING

A. Before placing each water piping system in operation, the piping system shall be thoroughly flushed out with clean water.

3.4 DISINFECTION OF PIPING

A. All new and existing domestic water piping shall be disinfected by a company or personnel regularly engaged in the performance of this service.

B. Fire suppression water piping supplied from a potable water system shall also be disinfected if the potable water systems, both public and private, is not protected by a double check valve assembly or reduced pressure backflow assembly.

C. Disinfection shall be performed in accordance with AWWA C651- 86 Standards. Disinfection shall be means of a chlorine solution injected into the water system near the source. Outlets throughout the system shall be tested to prove presence of minimum chlorine concentration. Flush out the system with clean water until the residual chlorine content is not greater than .2 parts per million or until approved by the Health Department.

D. Disinfection procedures shall be witnessed by the Architect, Engineer or other qualified representative.

END OF SECTION 22 1116

SECTION 221119 - DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following domestic water piping specialties:
   1. Water hammer arresters.

B. See Division 22 Section "Domestic Water Piping" for water meters.

1.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig, unless otherwise indicated.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

C. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. NSF Compliance:

   1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.
   2. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."

PART 2 - PRODUCTS

A. Point of Use Thermostatic Mixing Valves:

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

      a. Bradley Corporation
      b. Lawler Manufacturing Company, Inc.
      c. Leonard Valve Company.
      d. Powers; a Watts Industries Co.

2. Standard: ASSE 1070.
3. Pressure Rating: 125 psig.
4. Type: Exposed-mounting, thermostatically controlled water mixing valve.
5. Material: Bronze body with corrosion-resistant interior components.
6. Connections: Union inlets and outlet.
7. Accessories: Manual temperature control, check stops on hot- and cold-water supplies, and adjustable, thermometer on outlet, temperature-control handle.
8. Tempered-Water Setting: 105 deg F **.**
9. Tempered-Water Design Flow Rate: 0.5 gpm minimum**.**
10. Valve Finish: Rough bronze.
11. Piping Finish: Copper.

B.

2.2 WATER HAMMER ARRESTERS

A. Water Hammer Arresters :
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

2. MIFAB, Inc.
   a. Sioux Chief Manufacturing Company, Inc.
   b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   c. Watts Drainage Products Inc.
   d. Zurn Plumbing Products Group; Specification Drainage Operation.

3. Standard: ASSE 1010 or PDI-WH 201.
4. Type: Copper tube with piston.
5. Size: ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to Division 22 Section "Common Work Results for Plumbing" for piping joining materials, joint construction, and basic installation requirements.

B. Install balancing valves in locations where they can easily be adjusted.

C. Install temperature-actuated water mixing valves with check stops or shutoff valves on inlets and with shutoff valve on outlet.

1. Install thermometers and water regulators if specified.
2. Install cabinet-type units recessed in or surface mounted on wall as specified.

D. Install water hammer arresters on each quick closing valve in water piping according to PDI-WH 201.

E. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping and specialties.

F. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:

1. Intermediate atmospheric-vent backflow preventers.
2. Reduced-pressure-principle backflow preventers.
3. Double-check backflow-prevention assemblies.
4. Water pressure-reducing valves.
5. Primary, thermostatic, water mixing valves.
6. Supply-type, trap-seal primer valves.

G. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and prepare test reports:

1. Test each device according to authorities having jurisdiction and the device's reference standard.

B. Remove and replace malfunctioning domestic water piping specialties and retest as specified above.

3.3 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

B. Set field-adjustable flow of balancing valves.

C. Set field-adjustable temperature set points of temperature-actuated water mixing valves.

END OF SECTION 221119

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SECTION 22 1613 – NATURAL GAS HOUSE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipes, tubes, and fittings.
2. Piping specialties.
3. Piping and tubing joining materials.
4. Valves.
5. Pressure regulators.

1.2 PERFORMANCE REQUIREMENTS

A. Minimum Operating-Pressure Ratings:

1. Piping and Valves: 100 psig minimum unless otherwise indicated.
2. Service Regulators: 100 psig minimum unless otherwise indicated.

B. All gas piping work shall be in accordance with Gas Company requirements. Verify materials selected are in conformance before installation.

C. Intermediate natural gas piping shall run between the Gas company meter setting and the building at an intermediate pressure of 5 psi. Refer to detail 3, drawing P201 for branch pressure information.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Welding certificates.

C. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Materials and installation shall conform to standards and requirements of the Gas Company and the Ohio Building Code including the referenced International Fuel Gas Code.

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Refer to piping schedule on the Drawings for piping material and applications.

2.2 PIPING SPECIALTIES

A. Gas Pressure Regulators:

1. Gas pressure regulator shall be self-operating spring loaded type. Valve body shall be cast iron, 125 psi construction with screwed or flanged connections. Spring and diaphragm casings shall be aluminum. Regulator shall have an internal relief valve assembly, tapped vent connection with removable screen on the spring casing and an external pilot operator to afford a 5% maximum droop. Over-pressure protection shall be ten times the inlet pressure (or higher as may be required by the gas company).

2. Regulator shall be Sensus equal by Fisher, Sprague or Equimeter. Refer to the drawings for capacity, inlet and outlet pressures and installation detail.

2.3 VALVES

A. MATERIALS

1. Refer to Valve Schedule on drawings.

PART 3 - EXECUTION

3.1 PIPE APPLICATIONS

3.2 PIPING INSTALLATION

A. Basic piping installation requirements are specified in Division 22 Section "Common Piping Materials and Methods."

B. Outdoor Piping
1. Comply with NFPA 54 / the International Fuel Gas Code for installation and purging of natural-gas piping.

2. Install underground, natural-gas piping buried at least 36 inches below finished grade.

3. Install underground, PE, natural-gas piping according to ASTM D 2774. Steel piping shall not be installed underground.

4. Comply with requirements in Division 22 Section "Identification for Plumbing Piping and Equipment" for piping and valve identification. Install warning tape directly above gas piping, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

5. Install a single, highly molecular weight polyethylene (HMWPE) 14 AWG conductor, insulated tracer wire along run of natural gas piping. Wire shall have yellow insulation. Terminate wire above grade at each end of piping in a NEMA-3R weatherproof junction box. ASTM D-1248 for use polyethylene piping and UL 83 for conductor.

6. Steel Piping with Protective Coating:
   a. Apply joint cover kits to pipe after joining to cover, seal, and protect joints.
   b. Repair damage to PE coating on pipe as recommended in writing by protective coating manufacturer.
   c. Replace pipe having damaged PE coating with new pipe.

7. Install fittings for changes in direction and branch connections.

8. Exterior-Wall Pipe Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

9. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

10. Install pressure gage upstream and downstream from each service regulator. Pressure gages are specified in Division 22 Section "Meters and Gages.

11. Piping installed above ground and outdoors shall be painted to protect it from corrosion.

12. Refer to Division 22 Section "Identification for Plumbing Piping and Equipment" for equipment and piping labeling requirements.

C. Indoor Piping Installation

1. Valves, unions and threaded joints are not permitted in inaccessible locations. Valve shall not be located in ceiling air plenums and or other air plenums or ducts.

2. Comply with Gas Company for installation and purging of natural-gas piping.

3. A shutoff valve and dirt and moisture leg with screwed end cap shall be provided on the pipe drop to each item of equipment.

4. Gas pressure regulators shall be installed in accordance with the manufacturer’s instructions. Provide valved gauge taps upstream and downstream of the regulator and a pressure gauge on the downstream side. Provide pilot regulator piping and miscellaneous valves, devices and piping to complete the installation.

5. Vent piping shall be extended individually from each regulator and gas venting device to outside the building in an approved location.

6. Piping installed above ground and outdoors shall be painted to protect it from corrosion.

7. Unions and flanges shall be installed at pipe connections to fixtures and equipment and as required for erection purposed.

8. Refer to Division 22 Section "Pipe Hangers and Supports" for basic hanger and support requirements

9. Refer to Division 22 Section "Identification for Plumbing Piping and Equipment" for equipment and piping labeling requirements.

3.1 PIPING JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Welded Joints:

1. Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators.
2. Bevel plain ends of steel pipe.
3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

D. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657. Fittings shall be labeled ASTM D2513.

1. Plain-End Pipe and Fittings: Use butt fusion.
2. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.1 VALVE INSTALLATION

A. Install manual gas shutoff valve for each gas appliance.

B. Install regulator with maintenance space adequate for servicing and testing.

3.2 CONNECTIONS

A. Connect to utility's gas service according to utility's procedures and requirements.

B. Install natural-gas piping electrically continuous, and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70.

C. Install piping adjacent to appliances to allow service and maintenance of appliances.

D. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.

E. Dirt Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.

3.3 LABELING AND IDENTIFYING

3.4 FIELD QUALITY CONTROL

A. Test, inspect, and purge natural gas according to NFPA 54 / the International Fuel Gas Code and authorities having jurisdiction. Test pressure shall be 3 psi or 1.5 times the working pressure whichever is greater.

B. Natural-gas piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 22 1613

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SECTION 32 12 16 - ASPHALT PAVING

PART 1 - GENERAL

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.

2. SUMMARY

A. Section Includes:
   1. Hot-mix asphalt patching.
   2. Hot-mix asphalt paving.

B. Related Sections:

   1. Section 024116 "Structure Demolition" for demolition, removal, and recycling of existing asphalt pavements, and for geotextiles that are not embedded within courses of asphalt paving.
   2. Section 312000 "Earth Moving" for aggregate subbase and base courses and for aggregate pavement shoulders.
   3. Section 321373 "Concrete Paving Joint Sealants" for joint sealants and fillers at paving terminations.
   4. Section 321400 "Unit Paving" for bituminous setting bed for pavers.

3. DEFINITION

A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

4. ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
   1. Job-Mix Designs: For each job mix proposed for the Work.

B. Shop Drawings: Indicate pavement markings, lane separations, and defined parking spaces. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.

5. INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified manufacturer and Installer.

B. Material Certificates: For each paving material, from manufacturer.

C. Material Test Reports: For each paving material.

6. QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of Construction and Material Specifications of the State of Ohio DOT for asphalt paving work.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

2. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:

a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
b. Review condition of subgrade and preparatory work.
c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

7. DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

8. PROJECT 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 (15.6 deg C).
2. Tack Coat: Minimum surface temperature of 60 deg F (15.6 deg C).
3. Slurry Coat: Comply with weather limitations in ASTM D 3910.
4. Asphalt Base Course: Minimum surface temperature of 40 deg F (4.4 deg C) and rising at time of placement.

5. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.6 deg C) at time of placement.

PART 2 - PRODUCTS

1. AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

C. Fine Aggregate: ASTM D 1073 or AASHTO M 29, 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 D 242 or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2. ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320 or AASHTO MP 1a, PG 64-22.

B. Asphalt Cement: ASTM D 3381 for viscosity-graded material.

C. Prime Coat: Asphalt emulsion prime coat complying with ODOT requirements.

D. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

E. Fog Seal: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.

F. Water: Potable.

G. Undersealing Asphalt: ASTM D 3141, pumping consistency.

3. AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Sand: ASTM D 1073 or AASHTO M 29, Grade Nos. 2 or 3.

C. Paving Geotextile: AASHTO M 288, nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.

D. Joint Sealant: ASTM D 6690 or AASHTO M 324, Type I, hot-applied, single-component, polymer-modified bituminous sealant.

4. MIXES

A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.

B. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types."

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Provide mixes complying with composition, grading, and tolerance requirements in ASTM D 3515 for the following nominal, maximum aggregate sizes:

a. Base Course: 1 inch (25 mm).
b. Surface Course: 1/2 inch (13 mm).

C. Emulsified-Asphalt Slurry: ASTM D 3910, Type 1.

PART 3 - EXECUTION

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.

2. PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches (300 mm) into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseat concrete pieces firmly.

1. Pump hot undersealing asphalt under rocking slab until slab is stabilized or, if necessary, crack slab into pieces and roll to reseat pieces firmly.
2. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.

C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

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.

D. Patching: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3. 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 (25 mm) in existing pavements.

1. Install leveling wedges in compacted lifts not exceeding 3 inches (75 mm) thick.

4. SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Herbicide Treatment: Apply herbicide according to 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. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd. (0.7 to 2.3 L/sq. m). 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. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

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.

5. HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to 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 in number of lifts and thicknesses indicated.
2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at minimum temperature of 250 deg F (121 deg C).
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 (3 m) 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. Complete a section of asphalt base 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.

6. 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 (150 mm).
3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
4. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
5. Compact asphalt at joints to a density within 2 percent of specified course density.

7. 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 (85 deg C).

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: 96 percent of reference laboratory density according to ASTM D 6927 or AASHTO T 245, but not less than 94 percent nor greater than 100 percent.
2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor 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.

8. INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch (13 mm).
2. Surface Course: Plus 1/4 inch (6 mm), no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:
   1. Surface Course: 1/8 inch (3 mm).
   2. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch (6 mm).

C. Traffic-Calming Devices: Compact and form asphalt to produce the contour indicated and within a tolerance of plus or minus 1/8 inch (3 mm) of height indicated above pavement surface.

9. SURFACE TREATMENTS

A. Fog Seals: Apply fog seal at a rate of 0.10 to 0.15 gal./sq. yd. (0.45 to 0.7 L/sq. m) to existing asphalt pavement and allow to cure. With fine sand, lightly dust areas receiving excess fog seal.

B. Slurry Seals: Apply slurry coat in a uniform thickness according to ASTM D 3910 and allow to cure.

   1. Roll slurry seal to remove ridges and provide a uniform, smooth surface.

10. PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age for 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

   1. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 lb/gal. (0.72 kg/L).

11. WHEEL STOPS

A. Install wheel stops in bed of adhesive as recommended by manufacturer.

B. Securely attach wheel stops to pavement with not less than two galvanized-steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

12. FIELD QUALITY CONTROL

A. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

B. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

13. DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow milled materials to accumulate on-site.

END OF SECTION 321216